LOCAL RESOURCES MOBILISATION TOWARDS SUSTAINABLE SOLID WASTE MANAGEMENT IN TANZANIA: A CASE OF KINONDONI MUNICIPALITY, DAR ES SALAAM CITY

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A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY OF THE OPEN UNIVERSITY OF TANZANIA

2013

CERTIFICATION

The undersigned certifies that he has read and hereby recommends for examination by the Open University of Tanzania a thesis titled: ***Local Resources Mobilization Towards Sustainable Solid Waste Management in Tanzania: A Case of Kinondoni Municipality, Dar es Salaam City*** in fulfilment of the requirements for the Degree of Doctor of Philosophy of the Open University of Tanzania.

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Professor A. G. Kyessi

Supervisor

Date…….

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DECLARATION

I, **Tilotwa Wilson Babyebonela,** do hereby declare to the Senate of the Open University of Tanzania that this thesis is a result of my original work and has never been submitted for a degree award at any other University.

Signature……..

Date……..

DEDICATION

Dedicated to the Dar es Salaam City Council; Kinondoni Municipal Council; all residents of Kawe, Sinza and Hanna Nassif Wards; UN-Habitat workers; Institute of Social Work workers; my friends; and all my family members.

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ABSTRACT

This study dealt with Local Resources Mobilization towards Sustainable Solid Waste Management in Tanzania: A Case of Kinondoni Municipality, Dar es Salaam City. It was motivated by the fact that, regardless of various programmes which have been initiated in order to address the challenges of urban solid waste management, scanty literature exists on the relevance of bottom-up approach in local resource mobilization towards sustainable solid waste management. In order to fill this gap a new study was conducted in Kinondoni Municipality Council. I effect, the study revealed that top-down approach alone is not capable of mobilizing enough resources for facilitating sustainable solid waste management. Hence, the need for integrating both top-down and bottom-up approaches to solid waste management, where local community participation as a key dimension, was confirmed and recommended by the study. To this end, the study provides policy recommendations on five key issues, namely: institutionalising the policy framework for local resources mobilization, networking and mobilisation of local actors, supplementing conventional approach in municipal service provision, effective solid waste management cost recovery, and compliance with the waste hierarchy principle in contracts design. It is expected that, the study findings can inform decision-makers, practitioners, academicians, local community workers, the private sector, industries, development partners and other beneficiaries on the relevance of local resources mobilisation towards sustainable solid waste management.

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4Rs	:	Wastes Re-use, Re-cycling, Cost Recovery, and Reduction
CIUP	:	Community Infrastructure Upgrading Programme
CBOs	:	Community Based Organizations
DDC	:	Dar es Salaam Development Corporation
EIA	:	Environmental Impact Assessment
ERC	:	Environmental Research Consultancy
HWDA	:	Hanna Nassif Women Development Association
IDWE	:	Infections Diseases Week Findings
ISWM	:	Integrated Solid Waste Management
ISWMS	:	Integrated Solid Waste Management System
KIMWODA	:	Kinondoni Moscow Women Development Association
KMC	:	Kinondoni Municipal Council
KIWODET	:	Kisutu Women Development Trust
LEAT	:	Lawyers' Environmental Action Team
LGA's	:	Local Government Authorities
LGR	:	Local Government Reform
LGRF	:	Local Government Reform Programme
LRM	:	Local Resources Mobilisation
MDG's	:	Millennium Development Goals
MSWMS	:	Municipal Solid Waste Management Systems
NEMC	:	National Environmental Management Council
NGOs	:	Non- Governmental Organizations
NSGRP	:	National Strategy for Growth and Reduction of Poverty

OECD	:	Organization for Economic Cooperation and Development
PPP	:	Public - Private Partnership
PHDR	:	Poverty and Human Development Report
REPOA	:	Research on Poverty Alleviation
RAS	:	Rapid Appraisal Survey
SCEMG	:	Sinza Community Environmental Management Group
SRRUC	:	Shanghai Resources Recovery and Utilization Company
SSWM	:	Sustainable Solid Waste Management
SIMSM	:	Screening, Incentives, Monitoring and Sanction Mechanisms
SUDP	:	Strategic Urban Development Program
SWC	:	Solid Waste Collection
SWM	:	Solid Wastes Management
SWMS	:	Solid Waste Management Systems
TANGO	:	Tanzania Association of Non-Governmental Organizations
TECA	:	Tanzania Environmental Cleanliness Association
TZS	:	Tanzania Shillings
UN-CHS	:	United Nations Centre for Human Settlements
UN- Habitat	:	United Nations Human Settlements Program
UNEP	:	United Nations Environmental Program
USEPA	:	United States Environmental Protection Agency
WCED	:	World Commission on Environmental and Development

CHAPTER ONE

1.0 INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 Introduction

Municipal solid waste management is multi-disciplinary embracing both natural and social sciences. This is a community economic development study scoped to investigate socio- economic issues on integrated municipal solid waste management with various stakeholders in formal and informal settlements in Kinondoni Municipality, Dar es Salaam City, Tanzania. Thus, this chapter defines the nature and scope of the problem of solid waste management as it was addressed by the researcher in the study area. In this case the following issues are discussed: background to the study, statement of the problem, objectives of the study, research questions, significance of the study, and organization of the thesis.

1.2 Background to the Study

1.2.1 Definition of Solid Waste and Solid Waste Management

The history and tradition of humanity teaches us that the completion of various human activities always generates both prime-products and by-products. The challenge of managing by-products from human activities is inseparably connected with the history of urbanization and the related population growth. Prior to Neolithic time, that is about 10,000 B.C., when the human race was mostly nomadic, the natural decomposition of by-products from human activities was the normal way of getting rid of wastes, the phenomenon which can be referred to as the natural cycle of by-products management (Tibaijuka, 1998; Kironde, 1999).

However, the urbanization process stopped the natural cycle of solid waste management (SWM) for the following reasons: as time passed populations increased, cities emerged, urban settlements expanded and the related economic activities grew bigger day after day. As a consequence, improperly managed solid waste posed a risk to human health and the environment. For these reasons, the natural cycle of by-products management failed, eventually, conventional methods of by-products management had to be introduced by human beings in order to alleviate these problems. By-products from human beings activities are also called wastes, and they can be in a solid, liquid or gaseous state *(ibid*).

Thus, in general term solid waste management refers to collection, transfer, treatment, recycling, resources recovery and disposal off solid wastes in urban areas. In this case, the goal is to protect public health, promote hygiene, recover materials, reduce the quantity and avoid wastes eye sores, decrease emissions and residuals, and prevent the diseases such as typhoid fever and dysentery (Rwegasira, *et al*, 1996; Kironde, 1999).

1.2.2 Global Responses to the Challenges of Solid Waste Management

The challenge of solid waste management has featured in the agenda of many international organizations for a long time, with a view of promoting shared regulations and measures. These initiatives include the World summit on sustainable development (WSSD); the Millennium development goals (MDG); the G8 summit initiative on 3R's; the Kyoto Protocol on global climate change; and the Basel convention. Essentially, all of these initiatives emphasized the application of an

integrated approach to solid waste management, which entails the waste hierarchy principle. They aim at building a global recycling-oriented society through promoting the 3R's, namely: reducing, re-using, and re-cycling solid wastes (*ibid*).

1.2.3 Regional Responses to the Challenge of Solid Waste Management

Rapid urbanization in underdeveloped countries has increased pressure on urban infrastructure hence resulting into poor urban service delivery including uncollected solid wastes in most urban allocations in developing countries including Tanzania (Tibaijuka, 1998). However, *at this juncture the question is: Why put more emphasis on local resources mobilization (LRM) towards sustainable solid waste management?* This is because; municipal services provision including SWM is an expensive undertaking which requires ample resources: such as awareness, finance, personnel, equipment (Kironde, 1999; Majani, 2000; Kyessi, 2002; Tibaijuka, 2007). Also it requires an efficient management system if the focus is on sustainable development (*ibid).*

Some of the academicians reveal that, there exists a wide array of environmental problems which are associated with inadequate urban management and resources mobilization capacity (institutional capacity) of cities in the developing world especially in Africa (Stren, 1986; Fekade, 1994; UNCHS, 1996; Kyessi, 2002:3). However, the central characteristic problem of urban services insufficiency is not only the scale of population growth, but includes many other challenges. They include: growing urban poverty, poor national economic performance, insufficiency of conventional approaches and concepts, economics of infrastructure ignored,

neglected grass roots institutions, poor governance of resources, and a growing gap between demand and supply of municipal infrastructure services (Kombe W.J. 1994; Majani, 2002; Kyessi, 2002:3-37).

In developing countries, for example in Tanzania, municipal authorities serve only a limited part of the urban population, and in many cases, refuse collection is restricted to high income areas where the elites and senior government officials reside. In some cases even those living in decent housing areas are living next to mountains of heaps of garbage lying uncollected (Zurbrugg, 2000; Mwakalinga, 2005). The majority of the people especially in slum areas remain without waste collection services. These are the low income earners living in poor conditions in informal settlements *(ibid).*

Citing the 1996 Global Report on Human Settlements, Ogu (2000:103) notes that between one third and one half of the solid waste generated within most cities in low and middle income countries, remain uncollected. These usually end up at illegal dumpsites, along streets, on open spaces and on hazard waste land. The proportion of solid waste collected and disposed off is less than 40% in Karachi (Pakistan) and 60% in Jakarta (Indonesia) (Ogu, 2000:103).

The situation is worse in informal settlements in sub-Saharan Africa including Dar es Salaam City in Tanzania; where 50% of wastes generated are collected. Even the collected wastes are crudely dumped (Mwakalinga, 2005; Msangi, 2005; Kalwani, 2009). Zerbock (2003) asserts that the main reasons for such situation emanates from rapid urbanization, complex interrelationship of financial and management constraints, including inadequate financial resources, insufficient and poorly

maintained equipment, insufficient and inadequate qualified human resources, inappropriate management systems, corruption and mismanagement, and unwillingness of the residents to pay for refuse collection charges.

To this end, Dar es Salaam City in Tanzania and its three municipalities (i.e. Kinondoni, Ilala, and Temeke) is not exceptional (Mwakalinga, 2005; Tibaijuka, 2007). However, as one of the prime solution at recent years, there has been increased awareness by the central and local governments that local community development and related problems are best handled by locally based agencies (Kyessi, 2002: 36/37; Msangi, 2005).

1.2.4 National Responses to the Challenge of Solid Waste Management

Recent national responses to the challenge of solid waste management manifest themselves through the national environmental policy of 1997 and the national environmental management Act of 2004. These instruments are briefly discussed below. The National Environmental Policy was issued by the government of Tanzania in 1997. The policy outlines the six key environmental concerns as land degradation, deforestation, environmental pollution, loss of wildlife habitat and biodiversity, deterioration of aquatic and terrestrial ecosystems, and lack of accessible good quality water.

In so far as solid waste management is concerned, environmental pollution is very relevant. And the Environmental Management Act was enacted by the Tanzanian Parliament in 2004. Furthermore, the Act provides for the establishment of a

National Environment Management Council to coordinate environmental management issues at the national level. The Act also requires the appointment of sectoral, regional and district environmental coordinators, who in one way or another must address the problem of environmental pollution.

1.3 Statement of the Problem

Diminishing municipal and state resources coupled with inadequate urban management capacity and insufficiency of conventional approaches which have rendered it impossible to provide effective and efficient solid waste management in urban areas in developing countries and the need for local resources mobilization constitute the statement of the problem. Based on the background to the study it is clear that, regardless of various programmes which have been initiated globally, regionally and nationally in order to address the challenge of urban solid waste management, scanty literature exist on the tapping of bottom-up approaches in local resource mobilization towards sustainable solid waste management. Hence, it has been important to employ this study in order to alleviate the prevailing problem.

1.4 Objectives of the Study

The overall objective of this study was to explore the potentiality of the various modes of local resources mobilization toward the design of a framework that can meaningfully form the development of an integrated solid waste management (ISWM) in Kinondoni Municipality. Specifically, the study sought:

a) To assess the performance of solid waste management system in Kinondoni Municipality;

b) To describe and asses the strategies used in local resources mobilization for solid waste management that exists in Kinondoni Municipality;

c) To identify types and roles of actors involved in local resources mobilization for solid waste management in Kinondoni Municipality;

d) To determine constraints and potentials in local resources mobilization; and

e) To propose policy recommendations based on the research findings on various strategies of local resources mobilization for solid waste management in urban areas.

1.5 Research Questions

The main research question was: What is the potentiality of the various modes of local resources mobilization toward the design of a framework that can meaningfully form the development of an integrated solid waste management in Kinondoni Municipality? From this main question the following sub-questions were derived:

a) What is the performance of local resources mobilization in Kinondoni?

b) Why and how local resources are mobilised for solid waste management?

c) Who are the actors involved in local resources mobilization for solid waste management in Kinondoni Municipality and what are their roles?

d) What are the constraints and potentials facing various strategies of local resources mobilization for solid waste management?

e) What are the policy implications based on the research findings on various strategies of local resources mobilization for solid waste management in urban areas?

1.6 Significance of the Study

The findings of this research are intended to build up knowledge which shows that without local resources mobilization it is difficult to have sustainable solid waste management in urban areas, particularly in poor societies. Thus, the study findings are intended to inform decision-makers, practitioners, academicians, local community workers, the private sector, industries, development partners and other beneficiaries on the relevance of mobilising local resources towards sustainable solid waste management.

1.7 Organization of the Thesis

This study was organized in nine chapters. Chapter one an introduction and the research issue. Chapter two presents a review of literature that is relevant to urban solid waste management. Chapter three defines the research methodology. Chapter four presents the performance of solid waste management in Kinondoni Municipality. Chapter five discusses the performance of solid waste management through public-private-partnerships. Chapter six looks at the performance of solid waste management through informal community based organization (CBOs). Chapter seven examines the performance of solid waste management through formal non-governmental organizations (NGOs). Chapter eight unleashes a cross-cutting analysis of solid waste management in Sinza, Kawe and Hanna Nassif Wards. Finally, chapter nine reveals conclusions, policy implications and recommendations.

CHAPTER TWO

2.0 LITERATURE REVIEW ON RESOURCES MOBILIZATION FOR URBAN SOLID WASTE MANAGEMENT

2.1 Introduction

This chapter explores the relevant literature in order to identify and assess the issues and challenges pertaining to local resources mobilization toward sustainable solid waste management in Kinondoni Municipality, in Dar es Salaam City, Tanzania. Specifically, the following issues are addressed: solid waste management practices at Global, Regional and National levels; contextual issues in resources mobilization for solid waste management; theoretical frameworks for local resource mobilisation; and conceptualising local resource mobilisation for solid waste management.

2.2 Decentralization and Local Resources Mobilization

2.2.1 The Logic of Decentralisation

Decentralization can be discussed in terms of deconcentration, privatization, and partnerships. Deconcentration involves the transfer of authority for specific decision-making, financial and management functions by administrative means to different levels under the same jurisdictional authority of the central government. This is the least extensive type of administrative decentralization and the most common found in developing countries. General deconcentration occurs to the extent that a variety of tasks are deconcentrated to a horizontally integrated administrative system.

Functional deconcentration occurs to the extent that specific tasks are deconcentrated to the field units of a particular ministry or agency (Mukandala, R.S.1998). Thus,

privatization occurs when planning and administrative responsibility or other public functions are transferred from government to voluntary, private, or non-government institutions. In some cases, governments may transfer to "parallel organizations" such as national industrial and trade associations, professional or ecclesiastical organizations, political parties, or cooperatives - the right to license, regulate or supervise their members in performing functions that were previously controlled by the government. In other cases, governments may shift responsibility for producing goods or supplying services to private organizations, a process often called privatization (*ibid*).

Partnership entails transferring the responsibility for planning and delivery of services to CSOs. Decentralization measures applied to CSOs go beyond the local government level, reaching that part of the system of governance that is outside the various levels of the public administration and delegated agencies. At this level, partnership arrangements may involve a leading NGO, or an intermediary agent of a more complex nature, say an association established under private law, in which local common interest groups and associations, the NGOs operating in the area and representatives of local governments join together as members with equal rights (*ibid*).

Decentralization has some benefits to local communities. These benefits range from expected improvement in locative efficiency, welfare and equity to increased participation, accountability and responsiveness on the part of local authorities (Robinson, 2003). Other benefits include facilitation of democratic participation by

empowering grassroots actors to channel their inputs into the national development efforts, ensure that people explore their real needs such as local resources mobilization towards sustainable solid waste management and develop interest in seeing that they are realized, proper efficiency and effectiveness, improve service delivery, reduce conflicts, facilitate access to decision points, increase representation and enhance democracy (Kyessi, 2002:74).

2.2.2 Local Resources Mobilization

Resources mobilization refers to an expansion of relations with the resource providers, and the skills, knowledge and capacity for proper use of the same resources. It denotes the process that achieves the mission of the organization or an institution through mobilization of knowledge for human use of skills, equipments, services, etc. Thus, it refers, not to fund-raising only, but also includes other resources as well as the correct and maximum use of the available resources (Peter Berman, 1996; UNDP, 2002).

However, according to TANGO (2005) and Mwakalinga (2005), local resource means any contribution from within the local community that assists the implementation of an activity, project or program. They include a wide range of financial and non-financial contributions from local community members, including individual citizens, institutions, organizations, businesses, government authorities, etc.

Local resources as defined earlier, could imply many things including human resources (labour), intellectual and institutional capacity. The human resource base

varies according to culture as well as economic and historical factors. The natural resources that a country is endowed with also differ enormously, and their use depends, *inter alia*, on the prevailing technologies (ILO, 1993; UNDP, 2002).

Hence, this study refers to local resources mobilization as a process whereby individuals or local organizations such as CBOs/NGOs facilitates, collects and manage any kind of contributions from within the local community that assists the implementation of an activity, project or program. These local resources include a wide range of financial and non-financial contributions from local community members, including individual citizens, institutions, organizations, businesses, government authorities, etc. (TANGO, 2005). However, in the context of effective and efficient local resources mobilization towards sustainable SWM it can smoothly be attained when the unfolding of local community initiatives is routinely supported by the local authorities and all other relevant actors, based upon the local human and material resources. Local authorities are responsible for enabling the people in their respective jurisdictions to participate in planning and execution of development programmes in their areas (UNDP, 2002).

2.2.3 The Concept of Community Participation in Local Resources Mobilization

Participation is a process whereby stakeholders exercise influence over public decisions, and share control over resources and institutions that affect their lives, thereby providing a check on the power of the government (UNDP, 1994; Ruwa, 2001; TANGO, 2005). In the context of the good governance, participation is focused on the empowerment of citizens and addressing the interplay between the

broad range of civic societies, actors and actions. It occurs at various levels: at grassroots, through local and civic institutions; at the regional and national levels, through their flexible and decentralized forms of government, and also in the private sector *(ibid*). The principle of participation derives from an acceptance that people are at the heart of development. They are not only the ultimate beneficiaries of development, but also the agents of development. Figure 2.1 portrays the basic reasons for stakeholders' participation.

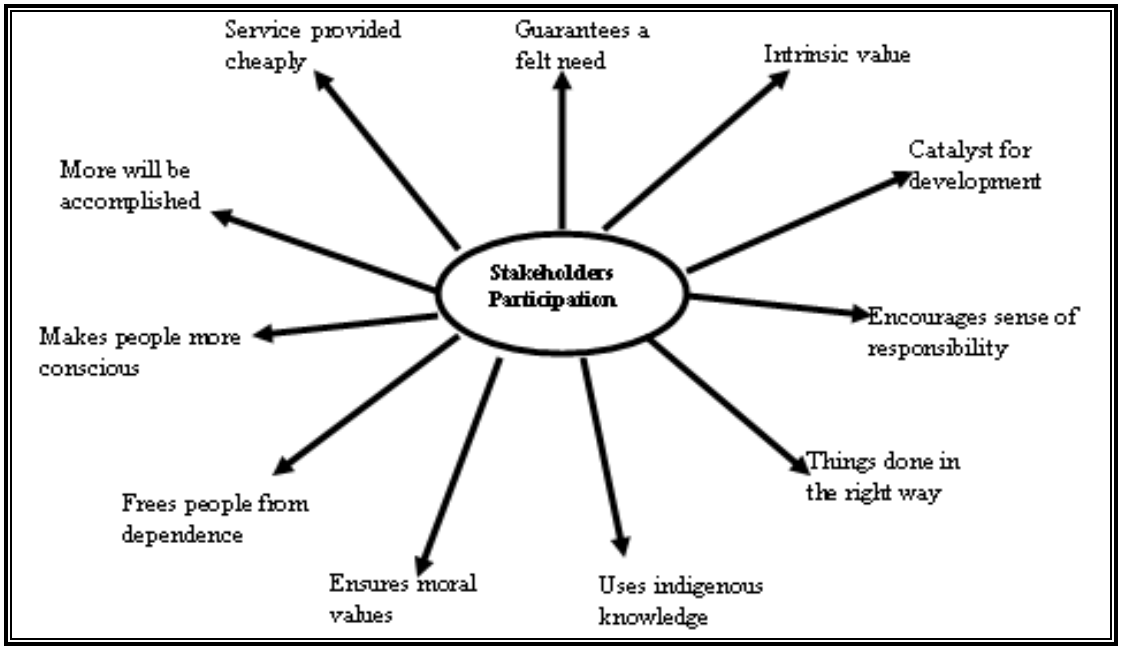


Figure 2.1: The Basic Reasons for Stakeholder's Participation

Source: TANGO, 2005

There are a number of key principles that underlie successful stakeholders participation planning. Concerning these principles, UNDP (1994), Ruwa (2001), and TANGO (2005) assert that the extent of stakeholders participation exercised depends on the planning process which may vary considerably but, the following list demonstrates the most significant elements in stakeholders participation:

information giving (e.g. public presentations); information gathering (for example, opinion surveys), discussion and negotiation in planning processes, power-sharing and participatory decision-making (e.g. participatory budgeting).

In short, the involvement of local communities helps the identification of problems and also planning of the layout of the disposal infrastructure itself. The knowledge and resources of local stakeholders provide invaluable benefits that may be measured in terms of cost-effectiveness and increased sustainability. These principles, if not adhered to, may undermine the planning process and the potential benefits of working with local stakeholders will be lost. These principles are the following: consensus, inclusiveness, transparency, accountability, and decisiveness (*ibid)*.

2.3 Solid Waste Management Practices at Global, Regional and National Levels

2.3.1 Global Responses to Solid Waste Management

Available literature indicates that, the amount of municipal solid waste (MSW), one of the most important by-products of an urban lifestyle, is growing faster than the rate of urbanization. For example, in 2002 there were 2.9 billion urban residents who generated about 0.64 kg of MSW per person per day, an equivalent of 0.68 billion tones per year. Ten years later, which is in 2012, estimates show that these amounts have increased to about 3 billion residents generating 1.2 kg per person per day, an equivalent of 1.3 billion tones per year. The rise of urban population from 2.9 billion residents in 2002 to about 3 billion residents in 2012 is the reason for the related rise in MSW generation which has increased from 0.64 kg per person per day in 2002 to 1.2 kg per person per day in 2012. In this regard, it is estimated that, by 2025 this

population will likely increase to 4.3 billion urban residents generating about 1.42 kg per capita per day of municipal solid waste. This is an equivalent of 2.2 billion tones per year (Daniel Hoornweg and Perinaz Bhada-Tata, 2012; World Bank, 2012). Table 2.1 summarizes these realities.

From Table 2.1, it follows that, there is a strong correlation between urban solid waste generation rates and population growth. Apart from population growth, MSW generation rate is also correlated with national gross domestic product (GDP) and illiteracy level. The correlation is in the form of a linear model, which assumes a linear relationship between the amount of municipal solid waste generation and its contributing factors, namely: population, GDP per capita, and illiteracy rate.

On the other hand, poorly managed waste has an enormous impact on health, local and global environment, and economy. Improperly managed waste usually results in down-stream costs higher than what it would have cost to manage the waste properly in the first place. The global nature of MSW includes its contribution to green house gases (GHG) emissions, e.g. the methane from the organic fraction of the waste stream, and the increasingly global linkages of products, urban practices, and the recycling industry. Thus, improving urban SWM services is one of the most effective ways to strengthen overall municipal management and is usually a prerequisite for other, more complicated, municipal services. Accordingly, various global actors have repeatedly sought to remedial interventions toward a better SWM practices.

This section examines the key global responses to the challenge of solid waste management.

Table 2.1: Global Trends of Urban Population and MSW Growth from 2012-25

Region	Current MSW Data (2012)				Projected MSW Data (2025)			
	Urban Population (millions)	Urban MSW Generation Per Capita (kg/capita/day)	Total Urban MSW Generation (tons/day)	Total Urban MSW Uncollected (tons/day)	Urban Population (millions)	Urban MSW Generation Per Capita (kg/capita/day)	Total Urban MSW Generation (tons/day)	Total Urban MSW Uncollected (tons/day)
Africa	260	0.65	169,119	91,324	518	0.85	441,840	238,594
East Asia and Pacific	777	0.95	738,958	206,908	1,229	1.5	1,865,379	522,306
Eastern and Central Asia	227	1.1	254,389	55,966	239	1.5	354,810	78,058
Latin America and the Caribbean	399	1.1	437,545	96,260	466	1.6	728,392	160,246
Middle East and North Africa	162	1.1	173,545	26,032	257	1.43	369,320	55,398
Organisation for Economic Co-operation and Development	729	2.2	1,566,286	31,326	842	2.1	1,742,417	34,848
South Asia	426	0.45	192,410	67,344	734	0.77	567,545	198,641
Total	2,980	1.2	3,532,252	575,159	4,285	1.4	6,069,703	128,8091

Source: Daniel Hoornweg and Perinaz Bhada-Tata, 2012

(a) The Basel Convention

The Basel Convention was on the Control of Transboundary Movements of Hazardous Wastes and their disposal which was an international treaty that was designed to reduce the movements of hazardous wastes between nations and specifically to prevent transfer of hazardous wastes from developed to less developed countries. The Basel Convention entered into force on 5th May 1992.

(b) World summit on sustainable development

In June 1992, the United Nations Conference on Environment and Development (UNCED), known as the "Earth Summit," was held and adopted a global action plan called "Agenda 21" for international activities in environment protection. Ten years later, in August 2002, the World Summit on Social Development was held to review the action plan and to discuss new challenges. As far as solid waste management is concerned, the key challenges identified included developing integrated solid waste management, placing utmost priority on waste prevention and minimization, re-use and recycling, and the application of environmentally sound disposal facilities. Another challenge identified was the promotion of waste prevention and minimizations by encouraging the production of re-usable consumer goods and biodegradable products. Hence, the WSSD emphasized the application of an integrated approach to solid waste management, which entails the waste hierarchy principle.

(c) Millennium development goals

The millennium development goals (MDG) were adopted by the United Nations General Assembly in 2000. They include the endeavour "to ensure environmental

sustainability." This is the seventh goal. Within the same goal the world targeted to integrate the principles of sustainable development into country policies and programmes; reverse the loss of environmental resources; and achieve significant improvement in the lives of at least 100 million slum dwellers by 2020.

(d) The G8 summit initiative on 3R's

In June 2004, the G8 Summit launched the "3R Initiative". This initiative aimed at building a global recycling-oriented society through promoting the three R's, namely: reduce, re-use, and re-cycle. As far as foreign aid to third world countries is concerned, cooperation in areas such as capacity development, raising public awareness, and the implementation of recycling projects is being sought through this initiative.

(e) The Kyoto protocol on global climate change

The Kyoto Protocol is a protocol to the United Nations Framework Convention on Climate Change (UNFCCC). It is an international environmental treaty with the goal of achieving the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Protocol came into force in February 2005. In the field of solid waste management, two approaches have attracted increasing attention. They are the recovery of methane (CH4) gas from landfill sites and recapturing energy from organic wastes.

2.3.2 Regional Responses to Local Resource Mobilization for SWM

This section describes the relevant experiences of innovative practices dealing with the improvement of waste management in urban poor settlements in various parts of

the third world countries. The projects chosen are organized along the following dimensions: project background and context, implementation arrangement, technical solutions, operational organization, financing, and analysis and synthesis of the project.

(a) Solid waste management through cooperative union in Rosario City, Argentina

This case study has been extracted from Samol *et al* (2005:46-51). According to this source, the purpose of the project was the improvement of hygiene and environmental infrastructure in neglected districts, in combination with measures for income generation and support for local initiatives and micro-enterprises. In 1999, with GTZ support, a cooperative was established to carry out domestic refuse collection, cleaning ditches and open sewer ducts, lawn mowing; and complementary environmental education on behalf of the city. Settlements with approximately 11,000 inhabitants were being served by the cooperative.

(i) Background and context

Argentina has undergone significant restructuring in the course of the last decades, and has privatized almost all state-owned enterprises in the process. Basic services and environmental management have been increasingly given over to private companies. On the one hand, this has provided more opportunities for local entrepreneurs; on the other hand, competition in the cities is harsh and often favours big international firms with large capital assets.

In many Argentinean cities, waste management simply means refuse collection, whereas integrated approaches to waste management planning are hardly known.

Even city administrations have little experience in this field, and therefore the privatization of services is generally limited to refuse collection and transportation. Private companies are not expected to offer intricate waste management solutions designed for specific local situations or settlement structures. In many cases "standard" solutions, copied from industrialized countries, do not yield the desired results. In addition, bidding procedures are mainly dominated by large, internationally active companies because of the very high initial costs for vehicles etc.

The city administration of the city of Rosario, an industrial and commercial centre of supra-regional importance, has contracted two private international firms for refuse collection, urban hygiene, and street cleaning in all six districts of the city. The problems of these different districts are, however, more complex than the solutions either company has so far presented. In large parts of Rosario, refuse collection is organized as a retrieval system. Inhabitants leave plastic bags with domestic refuse outside their homes on a daily basis. It is collected and loaded onto refuse trucks, so-called "compactors", and then disposed off on dumps without further treatment. In poorer districts, with built environments of medium density and various degrees of consolidation, the compactors cannot access streets that are unpaved or too narrow. Residents must therefore, bring their refuse to containers installed by the refuse disposal company.

Apart from the extra effort involved in this system, it is dependant in part on the residents themselves. Peripheral settlements especially have therefore, encountered a

variety of problems affecting urban hygiene. Container sites are frequently filthy and often the inhabitants do not appreciate the importance of dealing with their refuse properly. In most cases they are not directly aware of the negative consequences poor refuse management can have.

Informal refuse scavenging further exacerbates the problem: scavengers collect plastic bags and other waste materials in the commercial centers of the city, and bring them back to their homes on the periphery for separation and recycling. Because what remains of the garbage is often inadequately disposed of, peripheral housing areas frequently produce extremely large amounts of refuse in spite of relatively low population densities. Consequently numerous small dumping grounds eventually develop around peripheral settlements, and open drainage canals are commonly fouled up.

The city administration had not been able to develop appropriate refuse management solutions in cooperation with residents and private firms. Particularly poorer population groups have limited possibilities to make their voice heard in decision making processes on solid waste management or settlement development.

(ii) Implementation

Communal waste management in Rosario is a joint project of the city administration of Rosario and the GTZ. The project began with an educational trip to Bolivia for employees of Rosario's environmental authority. They visited micro-enterprises for refuse collection in peripheral areas difficult to access with trucks because of their adverse topography. Drawing experience from this trip, it was decided to adapt the

Bolivian example and apply it to a poorly serviced district of Rosario as a pilot project. A group was already involved in hygiene education as part of an employment generation program in that district, and, in addition, the employment office was actively supporting micro-enterprises there, with construction projects, carpentry, sewing work etc.

When the employment generation program ended, the group was encouraged to take in refuse collection and the improvement of urban hygiene in the district. They were advised to start a business in order to ensure the sustainability of their activities. With the help of the GTZ, the group organized themselves into a cooperative. The cooperatives now offers services were ranging from domestic refuse collection (using an adapted system), to street and sewage canal cleaning, as well as lawn mowing. The contract with the company originally in charge of waste disposal in the area was canceled. It remains responsible only for transporting containers to the dumping grounds. The district chosen for the pilot project is a poor residential area located in on the periphery most of its inhabitants work in the informal sector, some of them as collectors of recyclable material. In order to give the pilot project a good chance of succeeding, it was not implemented in the poorest districts of the city. Instead, a settlement was chosen where there had already been experience of working with inhabitants who then later formed themselves into a cooperative.

(iii) Technical solutions

Refuse collection is managed as a pick-up system. Members of the cooperative collect refuse bags at front doors and load them onto a special handcart that they push through the district, and in this way, even unpaved footpaths are accessible. At

the same time, streets and open sewage canals are cleared of refuse. Personal contacts between residents and refuse collectors make it easy to arrange which time of a day garbage bags should left outside. This helps to avoid them being rummaged through by stray dogs, which spread their contents and leave it for the wind to scatter. The collected refuse is taken from the handcart and loaded into containers - in this case, large open topped movable skips (also known as “dumpsters”) - at collection points located at the edge of the district. From here, private disposal companies take it to the dump in trucks. The cooperative is responsible for the maintenance and hygiene of the collection points.

(iv) Operational organization

The project's goal was to create a micro-enterprise that could be officially contracted by the city administration. A contractual arrangement was used that did not require a new round of public bidding. The founders of the cooperative had previously been involved in an 18 month employment generation program. Their tasks included educating the residents in the field of urban hygiene and organizing one-off cleaning up actions in some public places of the district. Preliminary investigations to determine the size of the project area and for the founding of the cooperative company were taken over by the GTZ's Communal Waste Management Project Rosario.

The utility and probable cost-effectiveness of the enterprise were checked by the city's employment office. After the company had been established, a contract was signed between the cooperative and the city's environmental authority – the commissioning institution in the field of waste management. Training for the

cooperative's original members was financed within the framework of a supra-regional GTZ project. Internal task allocation was managed by the members themselves. The GTZ supported the preparation of cost estimates and a business plan for services.

(v) Financing

The inhabitants of Rosario pay a property tax dependent on the size and location of their plot. This tax is used to finance communal services and is also charged in "informal" areas of the city. No extra charges are made for refuse collection, which is directly financed through the city budget. The cooperative's basic equipment was financed through an interest-free GTZ loan (3,000 US$), repayable within three years. Wheelbarrows, uniforms and tools were purchased with this money. After only 18 months of work, 50% of the loan had been repaid. The provincial government of Santa Fe awarded an additional US$ 2,500. The city's environmental authority is the contract partner.

(vi) Analysis and synthesis of the project

Spatial aspects: Spatially, the types of settlements in question were characterized as peripheral settlements with medium population densities, various degrees of consolidation and poor vehicle access. Rosario City had the inhabitants of 1,005,000 in 1999.

Organizational Set-up: Organizationally, the project was comprised of a cooperative of 12 residents of the affected settlements; the municipality; and GTZ. The cooperative of 12 residents were the implementers; GTZ provided advisory

assistance especially on organizational and financial issues; and the municipality supported the founding of the cooperative and awarded it a contract.

Technological support: Technologically, refuse collection was being done with handcarts and subsequent unloading to larger removable containers at central collection points; transport to municipal dump by private contractors with motorized vehicles. These private contractors also dealt with cleaning and maintenance of container sites; cleaning of sewage ditches; complementary environmental education of users.

Financial resources: Financially, financing of initial investment costs for basic equipment came from GTZ loan repayable over three years and a subsidy by the provincial government; and cost recovery was made through property tax as raised by the municipality.

Lessons learnt: A residents' poll taken 18 months after the cooperative's business started operating confirmed that the project was able to improve general living conditions and hygiene in the district. The members of the cooperative are residents of the area, and therefore there is a close relationship between refuse collectors and other inhabitants, which facilitates environmental education and awareness. It is argued that conventional refuse collection might not usually have this advantage. And in fact, this small cooperative enterprise offered the city administration a system of waste management especially designed to meet the district's needs. At the moment, however, the arrangement means that the city has additional costs and additional administration work, because a suitable form of contract has yet to be

worked out. The rules of competition prohibited a long-term contract, so the agreement had to be renewed on a monthly basis: this hindered the optimization of the technical processes. Under these circumstances, the cooperative was unable to make long-range plans or, for example, invest in a van.

While the city administration profited from the advantages of a small local enterprise and its benefits to the community, the cooperative received little recognition in other respects. Its members were not allowed to join the union of sanitation workers, and its economic significance was seen as minimal compared to that of the large, internationally organized companies. This resulted in a high level of dependence on the city administration, and encouraged paternalism and the exercise of influence. An important factor in the city administration's role in waste management was the design of its bid invitations. These openly favoured large private firms in spite of the fact that the cooperatives specialized services were unquestionably competitive. The competitiveness and profitability of the cooperative would, however, be improved if the area they serviced was bigger, and the technical equipment and the number of people employed were optimized. But pragmatism, i.e. doing what can be done under the circumstances, is inherent to such small and flexible projects.

(b) Solid Waste Management through CBOs in Qanater City near Cairo, Egypt

This case study has been extracted from UN-Habitat (2010) and Samol *et al* (2005:44-47). According to this source, the purpose of this project was the establishment of a solid waste management system operated by a community development organization in collaboration with the city administration. In 1997 was the beginning of technical cooperation in the context of the UNDP-LIFE programme

with support by GTZ; and 1999 was the end of support through the GTZ. The inhabitants as of 1999 were as follows: City (10,800,000) and Metropolitan Area (15,000,000).

(i) Background and context

The German contribution to the UNDP/LIFE project (Local Initiative Facility for the Urban Environment) consists of supporting waste management initiatives in different locations of the urban area of Cairo and Fayum. Geziret El Sheir is the most successful project area to date. The settlement is located on an island in the Nile about 30 km north of Cairo. The island officially belongs to Qanater City, a small town within the catchments area of the Egyptian capital. Its inhabitants are socially diverse. Although the majority of its 7,300 residents have a low income, only one tenth of families live in extreme poverty.

Because the island is located outside of the actual city, municipal refuse disposal services are sporadic or non-existent. Residents disposed of their garbage on the banks of the river. During high tide, the contents of cesspits flooded into houses and public open spaces. This appalling situation affected all the five peri-urban settlements of Geziret El Sheir equally, and caused illness and high child mortality rates.

The project is linked to a local community development organization (CDA). CDAs are legally authorized to take responsibility for a variety of tasks in their district, although their work does not usually extend beyond social activities and charity. The political-administrative system in Egypt is extremely centralized and city

administrations have hardly any leeway for policy development. Elected representatives at the city level consider themselves lobbyists for their own constituency, and show little interest in issues concerning the living conditions of poorer sections of the population. Before the project started, Geziret El Sheir had therefore been excluded from public waste management services in spite of the city administration's formal responsibility.

(ii) Implementation

The technical cooperation project was implemented in four relatively small areas (Kohafa/Fayum, Qanater City, Kassabgy/Gizeh and Boulaq el Dakrour/Gizeh) over a period of two and a half years. It aimed at establishing decentralized systems of refuse management in urban poor settlements by mobilizing young volunteers and cooperating with existing community associations. The most successful project was in Qanater City, where it was possible to establish both a refuse disposal system and a sewage management system on the island of Geziret El Sheir. This case study presents only measures pertaining to the project in Qanater City. Its implementation was based on the following components: mobilization of the local Community Development Association (CDA); activation and education of volunteers for mobilizing the population; financing of a small refuse truck and a pumping vehicle for feces disposal; participative development of organizational and financial concepts in cooperation with the city administration.

Twice a week, public employees collect domestic refuse from specific locations and transfer it to the municipal dumping grounds with a CDA truck. According to the estimates of those responsible, approximately 80% of the population is actively

involved in refuse collection and reliably pays the fees charged.

(iii) Technical solutions

Refuse disposal is handled through a drop-off system: rubbish bags are brought to collection points located near to the houses. A remodeled pickup truck then takes the refuse to the authorized dumping grounds. Distances are kept short by using small vehicles with the ability to maneuver in the narrow streets of the settlement. A CDA pumping vehicle empties private latrines for the normal fee for such services.

(iv) Operational organization

The project is innovative especially because it is based on a division of labor that involves a range of stakeholders. Empowering the local CDA (Community Development Association) is of central importance for mobilizing the population. As a quasi state-controlled CBO, the CDA is as much the local executing organization as its project counterpart. The input of the group of young volunteers makes a substantial contribution to the project's success. They work as mediators for the population, by collecting fees (whilst selling plastic rubbish bags door-to door) and motivating residents to get involved. A total of 32 youths regularly participate in the different project areas. In this way, loyalties and personal inter-dependencies are fostered, and the problem of corruption is virtually eliminated from the fee collection process.

Ultimately the system is based on cooperation with the city administration, which pays the refuse truck workers whilst being relieved of its (formal) street cleaning obligation. The cooperation of the city administration was achieved through

intensive discussions, which also involved local politicians, in what is called local-local dialogue, a conceptual element of UNDP/LIFE's project approach. In all, the following stakeholders became seamlessly integrated: the city administration and political representatives; the local CDA; youth volunteers for carrying out awareness campaigns, fee collection, and encouraging local participatory data collection and surveys; and the inhabitants.

(v) Financing

The refuse truck and latrine clearing vehicle were financed by the GTZ. The CDA organized a secure parking place. The city administration provides the project with four workers to collect refuse bags. In addition to their slim wages, the CDA pays them a bonus of EUR 3.00 per month. The CDA employs one manager for organizing refuse collection, and an additional supervisor is employed by the city administration. The project was as of March 2000 relatively well staffed.

Contributions made by the CDA are financed by a fee of EUR 0.6 charged per household per month. It is collected by volunteers by way of "selling" refuse bags. The fees cover operating expenses as well as the bonuses for public employees. These revenues are large enough to pay for maintenance and vehicle replacement, and even cover approximately 50% of the garbage truck's amortization costs. Financial sustainability is therefore at least partially secured. These financial provisions are unusually high by Egyptian standards, but stem from the conscious recognition of the advantages the project brings. In return for its “accommodation”, the city administration is released from formal street cleaning duties, which are now organized by the CDA and carried out by residents.

(vi) Analysis and synthesis of the project

Spatial aspects: This type of settlement was characterized as peri-urban settlement; the average population density was 500 to 700 inhabitants per hectare; and it approximately had 7,300 inhabitants.

Institutions involved: Organizationally, there were international and bilateral organizations (GTZ/UNDP); the city administration of Qanater City; CDA (Community Development Association); and volunteers from the districts. *Technology adopted:* Technologically, the project was characterized by door-to-door collection of refuse in plastic bags (pick-up retrieval system) and transport to central collection points; and transport of refuse from collection points to municipal dump by a pick-up truck remodeled for this purpose.

Financial support: Financially, the financing of initial investment costs came through the GTZ; and the financing of recurrent operational costs and approximately 50% of vehicle amortization costs came through user fees collected by the CDA.

Lessons learnt: Under this project, the operational organization facilitated an effective local resource mobilization framework. The GTZ contributed to the UNDP /LIFE program by helping local CDAs (Community Development Associations) become competent waste management operators, working with local volunteers and with the city administration. The project was successful, because it offered advantages to all stakeholders, namely: relief for the city administration; the solution of sanitation problems for the residents; and for the CDA, a strengthened local

community. Because of the strategic capabilities of the project's approach, the CDA became involved in a number of its own projects and has successfully acquired financial support from other international donors. At other GTZ project locations in Egypt, alliances between other kinds of stakeholders also worked successfully: for example, in Kassabgy (Gizah), private companies were involved, and in Kohafa (Gizah), there was cooperation with an international NGO, CARE.

(c) Waste management through PPP in Cotonou City, Benin

This case study has been extracted from UNEP (2005) Samol *et al* (2005:48-51). The purpose of the project was to put in place, waste disposal and recycling measures in a cooperation between a local NGO, private refuse collectors and the municipality. To this end, in 1993 a system of domestic waste collection was initiated. However, in 1995 the NGO Développement Communautaire et Assaisissement du Millieu (DCAM) took over waste disposal and separation for recycling; and in 1999 to 2000 recycling activities (plastic, biodegradable waste, compressed paper briquettes) were established and put in operation. In 1999 Cotonou City had the following inhabitants: City (500,000) and Metropolitan Area (approx. 1,000,000).

(i) Background and context

Cotonou is Benin's most important seaport, and also the country's economic and industrial center. Democratic reforms together with economic restructuring resulted in relatively high economic growth at the beginning of the 1990's. However, economic imbalances within the population increased. Many Benin City administrations, handicapped by a lack of resources, were unable to provide urban

inhabitants with basic services. NGOs, such as the Organization Confessionelle de Development (OCD), attempted to bridge the resulting gap. OCD is financed by the country's protestant church and administers a hospital (Centre de Santé de Bethesda) in the St. Rita quarter.

The hygiene situation in this urban area is extremely precarious and was held responsible not only for the general population's poor state of health but is also regarded as an obstacle to overall development. Rotting refuse on public streets polluted the air and caused infections and the breakout of epidemics.

(ii) Implementation

As early as 1993, a door-to-door system of domestic refuse collection was established with approximately US$ 115,000 of French development aid. Part of this money was also used to improve the necessary infrastructure and for the construction of a landfill. This funding enabled the OCD to found an initiative called *Développement Communautaire et Assaisissement du Millieu* (DCAM) to take over waste management tasks. DCAM organized door-to-door collection, contracting about 20 refuse collectors, supplying them with the necessary carts, supervising their work and arranging transport to the refuse disposal site.

They were partially financed through subscription fees and recruited workers from the area. After the initial funding was exhausted, DCAM continued collecting refuse, but could no longer afford to transport it the dump, which meant that refuse had to be stored on the settlement's periphery. A grant from the Protestant Development Service (EZE) in 1997 was aimed at helping restore the project's independence.

Working together with representatives from the town quarter and the local administration, residents were to be made more aware and more involved.

Extending the refuse collection system was to generate new employment. Educational measures were an important part of the program. The refuse collection system in the St. Rita town quarter was established successfully and because it was able to sustain itself through fees, it could be partially privatized. Each former employee was assigned a certain area of the settlement and managed it independently. Former employees now also collect fees, and, after subtracting DCAM licensing charges and credit repayments for the pushcarts, are allowed to keep the fees as profit. DCAM still monitors the work, in addition to distributing licenses and administering small reserve accounts for the refuse collectors, in case an old pushcart needs to be replaced. While the first phase of the project was mainly concerned with setting up a collection system, the focus has shifted towards refuse separation and reuse of recyclables. The capacity for separating plastic, paper, waste oil and biodegradable waste is now established. The notable success of these measures has resulted in a contract between the city administration of Cotonou and DCAM that covers all the refuse collected in the community. 400 cubic meters of refuse are sorted daily by more than 100 people and then transferred to different institutions for further processing. Costs are borne by the city administration.

(iii) Technical solutions

Transporting domestic refuse on pushcarts through unpaved, sometimes muddy streets proved to be difficult. The high cost of its subsequent transfer to central separation points or refuse dumps was another problem. DCAM therefore tried to

reduce the amount of unsorted refuse by promoting separation in households. The following materials are collected separately: paper, plastic, metal, glass, organic substances, and – for environmental reasons – batteries. Because of the large amounts of refuse that still reaches the central separation point unsorted, the use of future investment in equipment such as wheel loaders, sieve drums and conveyor belts is being considered. Appropriate methods for disposing of the remaining refuse are being examined.

Hazardous waste from the local hospital was treated in a small waste incinerator until its use was found to carry environmental and health risks. A contract was therefore signed with the largest hospital in the city, which has a modern incinerator where waste from other hospitals was also being handled. DCAM now collects refuse from hospitals across the whole city.

(iv) Operational organization

DCAM took up work in 1995. Its connection to church institutions through the OCD created a relationship of trust and thus simplified the lead-in to the work. Awareness-raising activities and environmental education were conducted at the level of residents and schools, and also at the level of the local authorities. Without the local district representatives' ready and willing support for DCAM's work, the project would never have materialized. Participation in the project is voluntary and linked to the payment of fees. An average of over 60% of all households has subscribed to DCAM's refuse collection services, although the number of subscribing households varies between settlements, and ranges from 30% to nearly 90%. Almost 80% of participating households pay their monthly fees of 1000 FCFA, or US$ 1.4 regularly.

DCAM has evolved into a highly professional NGO in its field with close to 130 employees.

(v) Financing

Transportation to the refuse dump is extremely costly because of the distances involved, the vehicles required, their gasoline consumption and their maintenance. It was impossible to cover these costs in the first phase of the project. About US$ 1,750 were needed to transport the monthly load of then 1,300 m3 of refuse to the dump. Now that DCAM separates all the refuse collected by communal agencies in its processing center about 25 km outside the city, the city administration has taken over transportation costs, and even pays US$ 10 per cubic meter for separation and processing.

Recently, however, Cotonou city administration has exhibited a bad attitude towards payment. It has not honored its obligations for months. Only a storm of protest from workers could make it do so. Additional funds are generated through the sale of recyclables and secondary raw materials (metals, bones, compost, plastic chips, plastic agglomerates, fuel briquettes, etc.). Within a year of its inception, the project is expected to be self-financing. This not only implies an increase in efficiency and an expansion of the project area, but above all, developing a market for recycled raw materials. Furthermore, economic independence is a precondition for possible future privatization in favor of current workers.

(vi) Analysis and synthesis of the project

Spatial aspects: This type of settlement was characterized as formal peripheral with low building density, located in an area prone to flooding.

Institutional and stakeholders aspects: Organizationally, there was a local NGO in cooperation with the city administration and with support from the Protestant Development Service (Evangelische Zentralstelle für Entwicklungshilfe - EZE).

Technological aspects: Technologically, the project entailed door-to-door domestic refuse collection with handcarts by individual private collectors; further transportation to dumpsite by the NGO; refuse separation and sorting at household level; and central refuse sorting and marketing of recycled material.

Financial aspects: Financially, the operational cost of refuse collection was financed through subscriber fees; and refuse separation and sorting was covered by a municipal subsidy.

Lessons learnt: The population has proven its willingness to pay a cost-covering fee for refuse collection after they have been adequately informed. For organizational reasons, local self-help groups were unable to take over waste management as originally planned. It seems necessary therefore, to revert to a central institution, like DCAM. Such an institution was not, however, work itself as a local refuse collector, but, after an initial testing period, its activities were to be privatized. In this way, the NGO could continue to operate in the educational field, and extend the project to cover other districts. Recycling of waste materials has demonstrated that financially self supporting structures are possible and attractive enough to be extended to other districts or even cities. Dissemination of the concept is the responsibility of the NGO.

2.3.3 Tanzanian Government's Response to Solid Waste Management

The various national responses to the challenge of solid waste management in Tanzania manifest themselves through the national environmental policy of 1997, the national environmental management Act of 2004, and other related interventions. These instruments and their impact at a national level are briefly discussed under this section.

(a) National environmental policy

The National environmental policy was issued by the government of Tanzania in 1997. The policy outlines the six key environmental concerns as land degradation, deforestation, environmental pollution, loss of wildlife habitat and biodiversity, deterioration of aquatic and terrestrial ecosystems, and lack of accessible good quality water. In so far as SWM is concerned, environmental pollution is very relevant. To this end, the National environment policy (NEP) recognizes the indispensable role of local governments in achieving its policy objectives. This is because most local authorities are better placed to receive local concerns and implement ways to create sustainable conditions.

(b) The environmental management Act

The environmental management Act was enacted by the Tanzanian Parliament in 2004. The Act provides for the establishment of a National environment management council to coordinate environmental management issues at the national level. The Act also requires the appointment of sectoral, regional and district environmental coordinators, who in one way or another must address the problem of environmental pollution. The role of the National Environment Management Council

(NEMC) is to act as the leading technical advisory, co-coordinating and regulatory agency, which is responsible for protection of environment and sustainable use of natural resources.

(c) MKUKUTA and public-private partnership frameworks

In 2010 Tanzania launched the National Strategy for Growth and Reduction of Poverty (NSGRP II), popularly known as MKUKUTA in Kiswahili. It includes an operational target with respect to the effectiveness of solid waste management, as measured by the ratio of collected waste versus generated waste in urban centers. According to the document, this ratio should increase from 47 per cent in 2008 to 85 percent in 2015. To this end, among other strategies, the government of Tanzania is committed to do the following: sensitizing key actors on public-private partnership(PPP) policy (2009) and PPP Act (2010); developing a guiding document for PPP implementation including in infrastructure sectors; capacity development for institutions engaging in PPP; expanding space for public private dialogue; ensuring that PPP is also pro-poor through development of inclusive markets; making markets work for the poor; and putting in place investment incentives and systems to encourage investment by domestic private sector participation in all sectors (URT, 2010:78, 101-103).

(d) The status of solid waste management in Tanzania

Despite of the above mentioned policy and legal interventions, literature indicates that, solid waste management problem is now surfacing with great intensity in cities, towns and rural areas in Tanzania. This implies that, urban authorities in Tanzania have failed to fulfil their duties in this regard. In most urban areas, only a fraction of

the waste generated daily is collected and disposed of by the authorities. In Dar es Salaam, Mwanza, Mbeya, Tanga Cities and other municicipalities and town in the country, it is estimated that only 20% to 30% of the urban solid waste generated was collected and disposed off. Thus, on the average, more than 60% of the solid waste was left uncollected in most urban centres (Magoma *et al.,* 2005; DCC, 2007; Kalwani, 2009).

2.3.4 Community Participation in Morogoro Municipality, Tanzania

This case study has been extracted from Kalwani (2009: 136-169). The Morogoro Municipality has already moved from conventional to participatory approaches in SWM. Thus, this case study on local resources mobilization for solid waste management was concluded by examining how participatory approaches are conducted with a focus on the existing organizational, legal, coordination, and resource and benefit factors. During the 1980s and 1990s, solid waste management under conventional approach was engulfed by various inefficiencies due to various reasons.

The Morogoro Municipal Council was then the sole provider of municipal solid waste services but was overwhelmed by rapid urbanization. As a result, much of the generated solid wastes remained uncollected or haphazardly dumped thus, polluting the municipal environment. For example, it is reported that, in 1998 the municipality generated roughly 3,300 tons of solid wastes per annum. It managed to collect only 30% of the solid wastes and it was dumped at Tungi estate quarry. And after that these wastes was burn and decomposed in an open air. As a result smoke

and offensive smell polluted the environment. Finally, the municipal environment became a source of various diseases to residents in the neighbourhood.

Faced by these challenges, early 1990s the Morogoro Municipality embarked on environmental planning management practice as a participatory approach to SWM. It was dubbed “Mpango wa Udhibiti wa Taka Ngumu Morogoro” (MUTAMO) in 2005. The purpose was to strengthen local capacity to plan, coordinate, and manage urban development and growth with emphasis on improved multi-sectoral coordination and community-based participation. This is to say that, the programme was intended to promote community participation in municipal solid wastes service provision through enterprising community based organizations. The organizational, legal, coordination, resource and benefit aspects relating to MUTAMO are summarized below.

Organizationally, community involvement in municipal solid wastes management was promoted. It involved distribution of roles and responsibilities to different stakeholders; coordination and supervision of such roles by the municipal authority. Their organogram linked generators, collectors and supervisors of municipal solid wastes in Morogoro Municipality. In this program, households were the principal generators and sweepers of municipal solid wastes at primary level. They had to pay a solid wastes collection service user charge to CBOs for collecting the solid wastes to secondary/transfer stations. CBOs were supposed to originate from the community which provides the same service. CBOs were contracted by the municipal authority essentially to discharge the service. The municipal authority had to supervise and reinforce municipal SWM activities according to the existing policy and public

health laws. It had to liaise with Wards leadership as part of the Municipal Government. Moreover, the municipal authority had to collect and transfer solid wastes from secondary collection points to the municipal dumpsite for final disposal. The assumption was that if the three parties discharged their responsibilities efficiently, sustainable SWM could be realized.

Legally, MUTAMO was guided by two legal instruments, namely, the Environmental Management Act of 2004 which was intended to enforce the National Environmental Policy and the by-Laws for CBOs engaged in SWM. The Morogoro Municipal Council enacted a by-law effecting the formation of CBOs in Wards. Registered community groups acquired a legal recognition to bid for municipal contracts for solid wastes service provision in Wards. They were empowered to collect solid wastes service user charges directly from households. Ward executive officers were directed to recognize the CBOs' role and oversee their selection and performance in mitaa. Coordinationally, MUTAMO entailed vertical and horizontal links in social, economic, technical and political aspects related to SWM in Morogoro Municipality. And for the purpose of making this program a success, MUTAMO entailed various strategies for LRM in terms of the following areas: external financial and technical assistance; internal financial sources; revenue collection; human resources; physical resources; land/space; and transportation of solid wastes.

In light of the above discussion, Kalwani (2009) managed to assess benefits of participatory SWM strategy. He concluded that, the local community especially in informal settlements gained very limited benefits. On the other hand, though at

small scale, the local government had its solid wastes collection service shared with the local communities as a result of which some form of cost recovery was achieved. Furthermore, Kalwani (2009) notes that, substantive cost recovery was hindered by the municipal local government for not utilizing optimally the surrounding wide stakeholder institutions. Moreover, he observed that, the municipal government failed to employ modern technology included in 4Rs in order to increase cost recovery opportunities.

2.4 Economic Aspects of Resource Mobilization for Solid Waste Management

Fiscally, solid waste management is a continuing challenge throughout the world (Kironde, 1999; Mwasumbi, 2003; Msangi, 2005; Tibaijuka, 2007). Tackling the problem of municipal solid waste management in a country like Tanzania where financial resources are severely scarce is very difficult.

The cost of municipal solid waste management is too huge; the money which could have been invested in other development activities for future income generations may end up paying municipal infrastructure services only. This is due to the fact that solid municipal solid waste management is a mult-disciplinary activity that requires proper integration and co-ordination, which involves several expertise's, for example, civil, environmental and mechanical engineers, chemists, land use planners, and politicians to mention few. These different disciplines should be well co-coordinated towards sustainable solid waste management to succeed.

Kyessi (2002:6) argues that, incomes of the poor can be increased if provided with better infrastructure services including solid waste management and which allows

every household member to devote more time for income earning through the same activity. Then, such poor people can be able to afford paying for the user service charges. However, this presupposes the presence of solid waste service provision in a competitive market situation. The competition in solid waste service provision may lead to low prices or affordable user service charges. However, this is possible where appropriate regulatory mechanisms prevails e.g. proper quality and quantity of services provided to protect consumers and the investors prevail (World Bank, 1994). When such conditions hold in a competitive market situation, they may lead to local resources mobilization for sustainable solid waste management in urban areas.

According to the above discussions, Figure 2.2 below shows an approach to SWM that takes into account the dynamics of environmental, social, and economic infrastructure service provision in general through integrated or multiple stakeholders' participation in urban areas. Generally, this approach is for the provision of sustainable social service originated in a market oriented situation in informal settlements' communities in urban areas. Briefly, it entails a causation-analysis on how sustainable social services provision in general can be achieved in informal settlements. This approach involves capital investment/costs level, integrated/multiple stakeholders participation level, and accrued revenue quasi proper planning in both cases i.e. at local communities/households as well as solid waste management actors such as contractors and Kinondoni Municipal Authority itself.

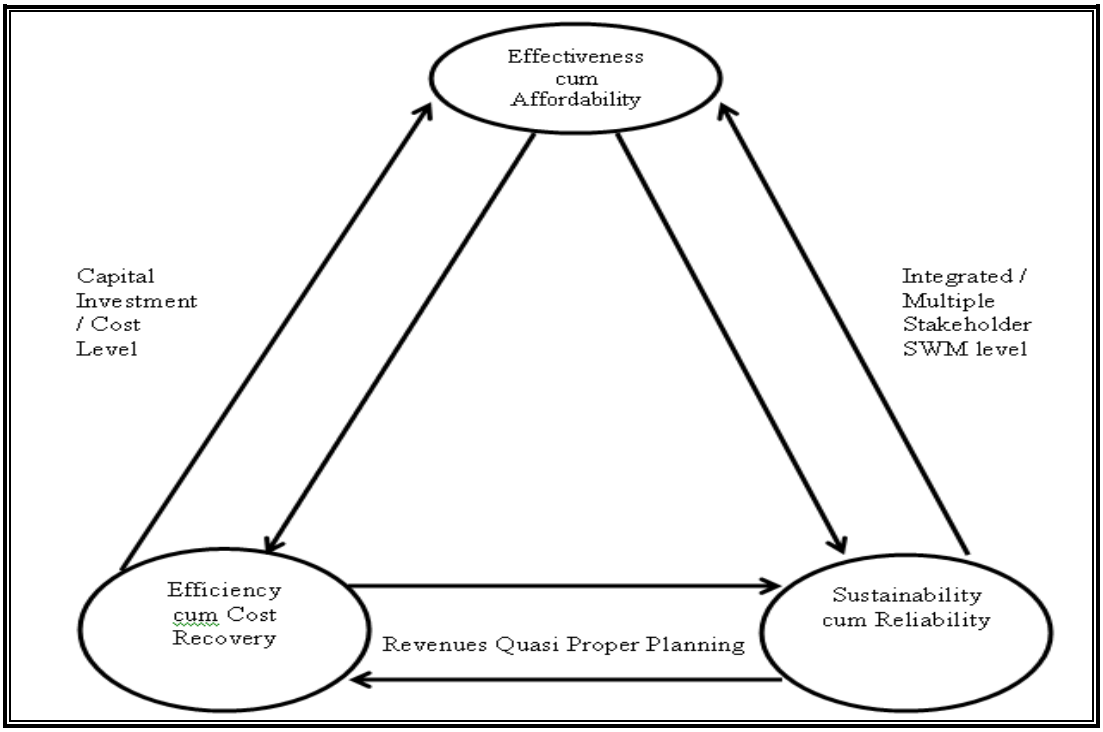


Figure 2.2: Municipal Dynamics Towards Sustainable SWM Approach

Source: Own construct

The approach above provides linkages of dynamics in local resources mobilization towards sustainable solid waste management, particularly in informal settlements in urban areas. It shows how capital /cost level of investments in solid waste management may facilitate affordability which results into the local community activity effectiveness hence smooth cost recovery of municipal infrastructure services provision. It further links with the amount of revenues collected by the actors which may constitute municipal infrastructure services provision reliability and hence local resources mobilization for sustainable solid waste management.

Thus, for developing countries like Tanzania, the question of willingness to pay is an important policy and relevant research problem that demands attention. Indeed,

rapid reconnaissance surveys of what consumers actually already pay for services need to be carried out. Results of several studies do point to the conclusion that when dealing with a settlement, conducting a relatively simple household survey can yield reliable sustainable SWM, the way the community is organized plus participation are the main two inevitable qualities which every community must posses.

2.5 Need for Local Resources Mobilization for Solid Waste Management

Local resources mobilization towards sustainable SWM emanates from cultural revitalization which demands enhancement of local communities' involvement in their socio-economic development through generation of a sense of self-confidence and mutual trust. This leads to more participative democracy, more responsible citizenship, increased social and economic effectiveness, creative technological change, and more sustainable poverty reduction (UNDP, 2002; TANGO, 2005; Tibaijuka, 2009)

An active culture is both a heritage and a development project, because it gives more meaning and direction (Oxfam GB, 2002:11; ILO, 2003). Development is the process by which vulnerabilities are reduced and local community capacities are increased. If equality and equity are the goals of development, then interventions must address the causes of peoples' weaknesses and recognize their source of strength, and understand the dynamic relationships between them. So, no one develops any one else; people and societies develop themselves, with or without external agencies (Goldsmith, quoted in Moore, 1995). However, these local

communities' dynamics need to be continuously assessed, monitored, and evaluated in order to see how or at what degree they meet a wider pattern of socio-economic development *(ibid*).

However, the vexed question is: what are the benefits of local resources mobilization for solid waste management? Effective and efficient SWM is reflected in both environmental and economic aspects, i.e. minimization of environmental and health risks are an implicit result in maximization of economic and social benefits. This situation manifests in the activities of sorting and sanitary disposal and recycling. Efficiency in the balancing of these costs and benefits is an integral ingredient of local communities' socio-economic development. This efficiency normally emanates from strong institutional capacities which effectively accomplish the objectives of environmental cleanliness on the one hand, and generates economic activities such as recycling on the other, and which eventually creates self-employment for cities local communities and assists concerted efforts to alleviate urban poverty.

In summary, Chinamo (2003) conceded important benefits for involving local communities in solid waste management as follows:

i) Provision of efficient and effective services in their localities;
ii) Possibilities of lower costs through introduction of commercial principles;
iii) Pay greater attention to customer satisfaction;
iv) Easily drawing on local and international experience;
v) Easily extension of services to the disadvantaged and low income communities in urban areas;

vi) Creation of employment through private companies, NGO's, CBO's and/or individuals;

vii) Improved primary solid waste collection, cleanliness in the neighborhoods, living conditions and productivity; and

viii) Reduced incidences of diseases that are transmitted by flies and other insects.

2.6 Theoretical Frameworks for Local Resource Mobilization

In light of this understanding and the preceding literature review, what follows, therefore, is a description of the central elements of some theoretical and conceptual models that were used as interpretive guides for supporting and explaining local resources mobilization towards sustainable solid waste management in the area of study.

2.6.1 Institutional Economic Theory

The first interpretive framework that informed this study was the institutional economic theory. The central premises entailed by this theory were discussed below and finally its application to integrated solid waste management systems was highlighted.

The institutional economic theory considers the processes by which structures, including schemes; rules, norms, and routines, become established as authoritative guidelines for social behavior. It inquires into how these elements are created, diffused, adopted, and adapted over space and time; and how they fall into decline and disuse. Although the ostensible subject is stability and order in social life, the

theory attends not only to consensus and conformity but also to conflict and change in social structures (Oliver, 1991; Majani, 2000).

Institutions by definition connote stability but are subject to change processes, both incremental and discontinuous. Majani 2000 and Kalwani, 2009 shed light on the meaning of "institutions" by asserting that, the new institutionalism in organization theory and sociology comprises a rejection of rational-actor models, an interest in institutions as independent variables, a turn toward cognitive and cultural explanations, and an interest in properties of supra-individual units of analysis that cannot be reduced to aggregations or direct consequences of individuals' attributes or motives.

According to this theory, the social structures mentioned above are both imposed on and upheld by the actors (e.g. an individual, an organization, etc.) behaviour. Concerning this matter, one cognitively oriented view is that a given institution is encoded into an actor through a socialization process. When internalized, it transforms to a script of a patterned behaviour. When the actor behaves according to the script, the institution is enacted.

In this manner, institutions are continuously reproduced. The enactment of an institution externalizes or objectifies it. In this way, other actors can see that the institution is in play, and a new round of socialization starts. After some time, the institution and the resulting patterned behaviour becomes sediment and taken for granted. Then, it might be difficult for the actors even to realize that their behaviour is in fact partly controlled by an institution. Acting in accordance with the institution

is viewed as rational by those who share the institution *(ibid*).

The relevance of this theory to local resources mobilization towards sustainable solid waste management stems from the fact that, it furnished a researcher with a convenient framework within which the following questions could be answered satisfactorily: *What are the normative, evaluative and existential beliefs that guide SWM? Which institutional actors participate in LRM towards sustainable SWM? To what extent is LRM towards sustainable SWM institutionalised?*

2.6.2 Principal-Agent Theory

The second interpretive framework that informed this study was the principal-agent theory. The central premises entailed by this theory were discussed below and finally its application to integrated solid waste management system was highlighted.

The principal-agent theory defines an organization as a system that is comprised of networks of overlapping or nested relationships between principals and agents. These chains of delegation and accountability between principals and their agents are the key to the division of labor and development of specialization within an organization. According to this theory, delegation entails one actor (called a principal) voluntarily giving over one's authority to perform certain responsibilities to another actor (called an agent), where the latter voluntarily accepts the responsibilities and is expected to act on behalf of and in the best interest of the principal.

Principal-agent relationships are inherent in many social interactions. For example, labour (employer and employees), franchises (franchisor and franchisee), regulation

(regulator and regulated company), investors (shareholders and executives), courts (clients and lawyer), medicine (patients and doctors) and markets (buyers and sellers) entail principal-agent relationships.

These relationships have many things in common. The first is a contract concluded on the basis of a free and informed consent on either side. It can be oral or written. This contract defines the rights and duties of each party. The second common element in all principal/agent relationships is that they entail accountability. Accountability is the agent's obligation to report to the principal, to explain, to justify, to answer questions about how resources have been used, and to what effect. In this case, the principal is called the forum of accountability and has veto power over the agent's decisions and actions (Thompson, 2007).

And the third common element in all principal/agent relationships is that they entail propensity toward corruption of power through bribes involving the agent. Simply stated, a bribe is a payment, made by a third party to an agent, in which the agent explicitly or implicitly agrees to take an action that is contrary to his duty as defined by the agent's principal and is thus in the interest of, not the principal, but the third party. Thus, in order to check the propensity toward corruption on the part of the agent there must exist an accountability mechanism as a necessary check on the corruption of power, including fraud, manipulation and the like *(ibid*).

Under such accountability mechanism, the principal-agent theory suggests a number of ways by which some of the principal/agent problems can be mitigated. Specifically, there are four main mechanisms by which principals can mitigate

principal/agent problems. The first is selection/screening, by which the principal carefully vets the agent to ensure to the greatest degree possible that the agent has preferences and goals similar to those held by the principal. Second, the principal can design an incentive structure that ties the performance of the agent to the agent's compensation. This implies the third mechanism, namely, the careful monitoring of the agent's performance.

Finally, the principal can design sanctions that impose some penalty on the agent for poor performance. Sanctions are, of course, the flip side of incentives. Incentives are the carrot, while sanctions are the stick. While none of these possible solutions are costless, they can provide the principal greater discretion over the performance of the agent. An assessor can use the presence, or absence of selection/screening, incentives, monitoring, and sanction mechanisms to evaluate the principal/agent relationships that exist in any given organization as they pertain to the effectiveness and efficiency of the organization or system. The mechanisms of selection/screening, incentives, monitoring, and sanction mechanisms can be remembers through an acronym “SIMSM” (Kiewiet and McCubbins, 1991).

The relevance of this theory to SWM stems from the fact that, it furnished a researcher with a convenient framework within which the following questions could be answered satisfactorily: *Who are the principals and agents within a typical SWM system? What problems do arise from the agents’ side in the principal/agent equation? And to what extent do organisations participating in SWM control the propensity to corruption of power on the part of agents through selection/screening, incentives, monitoring, and sanction mechanisms?*

2.6.3 Social Capital Theory

The third interpretive framework which informed this study was the social capital theory. The central premises entailed by this theory were discussed below and finally its application to ISWMS was highlighted.

The social capital theory implicitly existed ever since small communities formed and humans interacted with the expectation of reciprocation and trust. However, the theory in its present form was popularized by authors such as Fekade (1994) and Majani (2000). Within its present form, it can be discussed under the following sub-headings: the social capital construct; dimensions, levels, types, determinants, benefits and downsides of social capital.

The social capital construct entails the value of social networks, bonding similar people and bridging between diverse people, with norms of reciprocity. It has been defined differently by different authors. One of the best definitions is the following: social capital is the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus, comprises both the network and the assets that may be mobilized through that network' (Nahapiet and Ghoshal 1998).

Social capital has many dimensions. For example, according to Nahapiet and Ghoshal (1998), social capital can be seen in terms of five dimensions. The first dimension is networks, that is, lateral associations that vary in density and size, and occur among both individuals and groups. The second dimension is reciprocity, that

is, expectation that in short or long term kindness and services will be returned. The third dimension is trust, that is, willingness to take initiatives (or risk) in a social context based on assumption that others will respond as expected.

The fourth dimension is social norms, that is, the unwritten shared values that direct behaviours and interactions. And the fifth dimension is personal and collective efficacy, that is, the active and willing engagement of citizens within participative community. These five dimensions manifest themselves in various combinations and shape the interaction amongst the members of a group, organization, community, society or simply network and can be studied through various perspectives.

However, there are different levels at which social capital is located, such as the individual, the informal social group, the formal organization, the community, the ethnic group and even the nation. There are divergent views in the literature; some authors posit social capital at the individual level, some the community level and others have a more dynamic views. Some state that social capital exists within levels or scales as one feels belonging to family, community, profession, country, etc, simultaneously. Supporters of these views argue that social capital's sources lie in the social structure within which the actor is located.

The relevance of this theory to SWM stems from the fact that, it furnished a researcher with a convenient framework within which the following questions could be answered satisfactorily: *To what extent can inter-personal trust assist in revitalizing SWM? What types of social capital can be mobilized at a micro (individual), meso (group) and macro (societal) levels toward sustainable SWM?*

2.6.4 Collective Action Theory

The fourth interpretive framework which informed this study was the collective action theory. The central premises entailed by this theory were discussed below and finally its application to solid waste management was highlighted. The collective action theory asserts that the motivation for collective action ultimately depends on whether stakeholders foresee net benefits from taking part in a common project. This is to say that, people agree to cooperate in order to do something that none of them thinks is more easily done independently. When the cooperation is successful, all parties improve their position by virtue of the cooperation. Thus, two or more persons cooperate because somehow their interaction results in a product that is greater than it would have been if they had acted independently. Such a product is called a common human good (Samuelson, 1954).

Thus, the fundamental construct in the collective action theory is the concept of human goods. A human good is anything which contributes, either directly or indirectly, to human flourishing, which entails the fulfillment of positive human potentialities. Along with the products generated by the market, human goods include such disparate items as friendship, love and conviviality; the exercise of the imagination; the acquisition of knowledge and understanding; the development and application of complex skills and capacities; the aesthetic appreciation of nature, and engagement in activities which are seen as productive of other goods. Thus although economic goods are properly so called, there is no reason to restrict the class of human goods to these alone. Nor is there any reason to believe that the relative value of different kinds of human goods can be expressed or measured in monetary terms

(Gleason, 1997).

The theory asserts that human goods exist as a spectrum ranging from private goods to public goods. Private goods tend to be excludable and rivalries in consumption. For example, a piece of cake, once consumed, cannot be enjoyed by others. On the other hand, public goods are non-rivalries and non-excludable in consumption. Private goods are best provided by the market while public goods are best provided by the government. And within a state, the demarcation between private and public goods is a policy matter which is determined politically *(ibid*).

According to this theory, regardless of the trait of individual rationality which is inherent in each group member, collective action may fail due to collective irrationality**.** This failure is likely to ensue if any of the following two reasons exists. The first reason is group size. The theory suggests that group size influenced collective action in three ways: larger groups would be less likely to achieve collective action at all, the overall level of collective provision would be lower for larger groups that did achieve collective action, and the degree of sub-optimality in collective provision would increase with group size. (Olson, 1965).

The second reason for collective action failure is group heterogeneity, that is, the absence of homogeneity in terms of endowments, political, wealth, cultural, racial, and economic dimensions. According to the theory, homogeneity may also have a bearing on collective action. Sharing important social, cultural, or economic characteristics may increase the predictability of interactions. Predictability may in

turn provide a basis for trust. Even if trust does not arise from predictability, for instance, if members of a homogeneous group consider themselves to be predictably opportunistic, common traits suggest common interests. In this case, whether it promotes trust or reflects common interests, homogeneity may facilitate collective action *(ibid*).

The relevance of this theory to SWM stems from the fact that, it furnished a researcher with a convenient framework within which the following questions could be answered satisfactorily: *Which SWM services can be treated as public goods? Which SWM services can be treated as private goods? How can the problem of free-riding public services with respect to SWM be addressed? What are the conditions under which collective action towards effective and efficient solid waste management services may fail?*

2.6.5 Market Processes Theory

The fifth interpretive framework which informed this study was the market processes theory. The central premises entailed by this theory were discussed below and finally its application to solid waste management was highlighted.

According to the market processes theory, a market is a set up where two or more parties engage in exchange of goods, services and information. And where the two parties involved in a transaction are called seller and buyer. And the market process entails economic competition where sellers compete for buyers in accordance with the laws of demand and supply. This competition goes on until when a market is at equilibrium point (Menger, 1950).

According to the theory, for a market to exist the following conditions must be satisfied: buyers and sellers must engage in voluntary exchanges, as price takers; the good or service must be homogeneous across sellers such that there is a possibility for a buyer to switch to an alternative seller; the goods or services must be a true private goods, that is rivalries and excludable; there must be a relatively open entry and exit into the market; buyers and sellers must have access to complete information; and the government or some other alternative organization must provide for contract compliance to ensure that property rights are respected (Gleason, 1997).

According to the market processes theory, market failure is a concept describing a scenario in which the allocation of goods and services by a free market is inefficient. Such inefficiencies are often associated with information asymmetries, non-competitive markets, principal–agent problems, externalities, or public goods. Market outcomes are termed efficient if the same level of total benefits which they generate cannot be obtained at lower cost or, alternatively, if greater benefits cannot be generated at the same level of costs.

In either case, the resulting total benefits must exceed total costs if the outcomes are to be deemed efficient. Efficiency, thus, is like a contest among different ways of doing a job. If the market can accomplish the job at a lower cost than can other non-market arrangements, or can do a better job for the same costs, then the market is relatively efficient. On the other hand, if non-market arrangements can accomplish the task at lower cost, or can do it better for the same cost, then the market is, in this respect, relatively inefficient *(ibid*).

Specifically, the market can fail to exist if these conditions are not satisfied. This is to say that, markets can fail if: only one seller provides a good or service (monopoly) or one buyer seeks a good or service (monopsony); buyers or sellers, or both, are compelled by the state or some other agency to enter into non-voluntary exchanges; a good or service is so unique that only one seller offers it or only one buyer seeks it; government (or some other agent) restricts exit and entry into the market; the buyers or sellers are prevented from gathering information about alternative exchanges; contracts are ignored or if private property conventions are not upheld by the state or some other agency; when natural monopoly exists because the good is not sub tractable or excludable or both; and when there are many hierarchies, that is bureaucracies and complex organizations, where non-market decision systems establish priorities for allocation (*ibid*).

When markets fail, governments must step in. This is to say that, market failures of various sorts provide the principal rationale for attempted non-market remedies. However, in both cases, the failures, whether market or non-market, can and should be evaluated in terms of the same criteria of success, namely: allocative efficiency. Thus, non-market remedies fail to the extent they, too, result in outcomes that depart from the efficiency goals by which market outcomes are judged to fail. Thus, the theory of market processes represents a normative framework on the basis of which one can identify instances where the level of societal welfare produced by market processes alone can be further improved through non-market organizations (Kirzner, 1963). The relevance of this theory to SWM stems from the fact that, it furnished a researcher with a convenient framework within which the following questions could

be answered satisfactorily: *If SWM services are treated as private goods, under what conditions would perfect market exist? What remedial actions can be taken by stakeholders of solid waste management when market failure happens?*

2.7 Conceptualizing Local Resources Mobilization

In light of the above literature review, the following conceptual framework was formulated as a tool for guiding the present research. It highlights parameters to be examined, the key variables and their relationships with reference to the study problem. The framework highlights six independent variables entailed by the research process. These six independent variables are: legal factors, institutional factors, spatial factors, technological factors, financial factors, and organizational factors. Figure 2.3 shows their conceptual relationships to local resource mobilization.

The conceptual framework below shows two types of variables, namely: local resource mobilization towards sustainable solid waste management (SSWM) as the dependent variable, and on the other hand, the following six independent variables: legal, institutional, spatial, technological, financial and organizational factors. They are described briefly in Figure 2.3.

2.7.1 Legal Factors

Legal factors refer to constitutional provisions, statutes, regulations and by-laws which are required to control individual and institutional behaviours in relation to municipal solid waste management transactions. They also, define stakeholders' different responsibilities, accountabilities, rights, and regulate environmental

management. However, rules and norms, by-laws, culture, and attitudes of mind can have negative or positive impact on the sustainability of municipal solid waste management depending on the prevailing socio-economic situation in the local community (TANGO, 2005; Msangi, 2005; Kalwani, 2009).

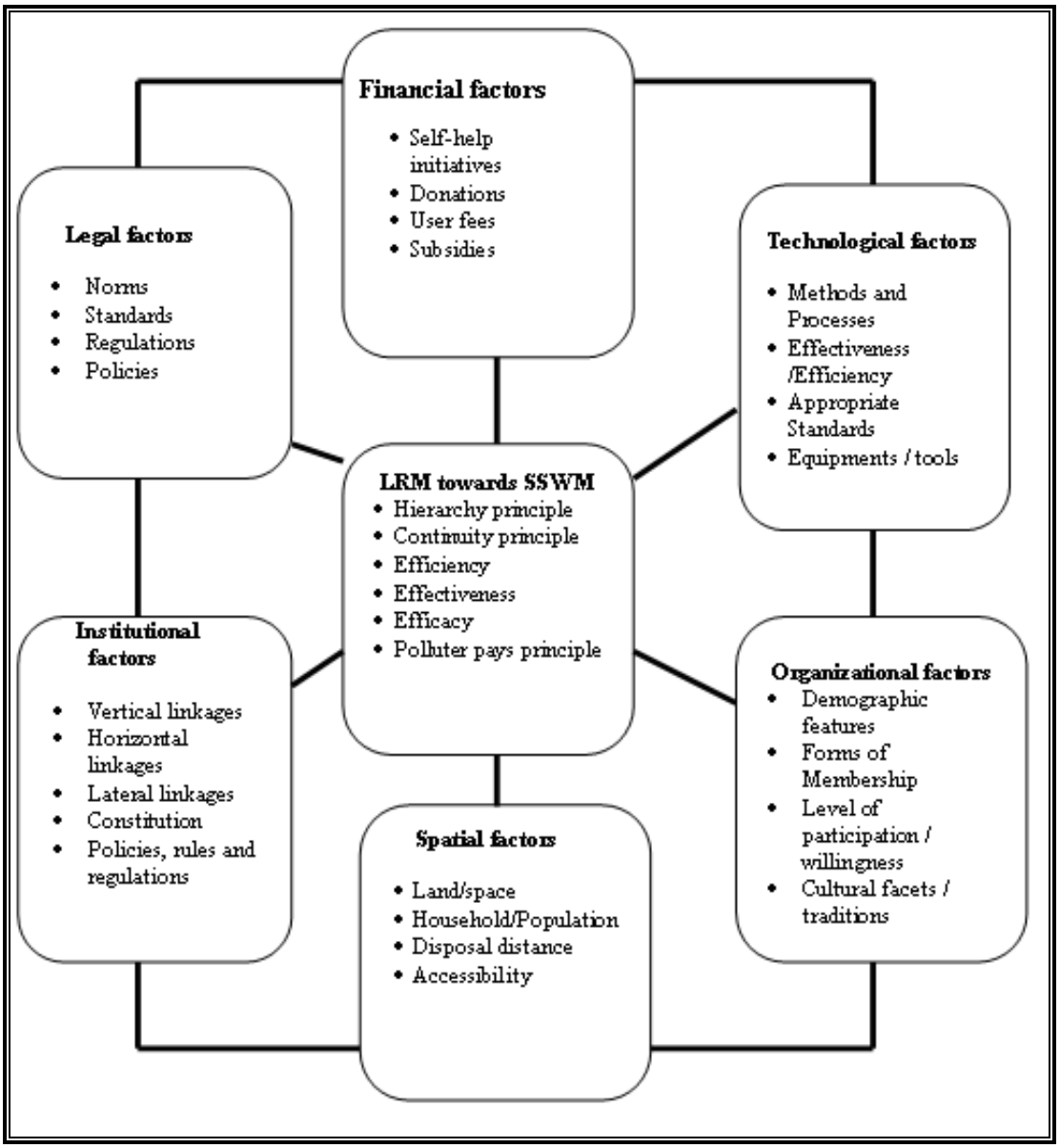


Figure 2.3: Conceptual Framework

Source: Own construct

2.7.2 Organizational Factors

Organisational factors refer to instruments such as written constitution, goals, objectives, values, procedures, rules, regulations, policies and other norms which are needed for facilitating the governance of an organization toward an effective and efficient municipal solid waste management. Such an organisation can be registered by an authority that is recognised by the laws of the land or otherwise. When registered an organisation is said to be formal, while it is referred to as informal if unregistered. In either case, the said organisational factors are required to facilitate community participation in solid waste management. They are needed for enhancing regular flow of linkages within an organization and other partners (Msangi, 2005; Kalwani, 2009).

2.7.3 Institutional Factors

Institutional factors entail instruments such as written constitution, goals, objectives, values, procedures, rules, regulations, and norms which are needed for facilitating the governance of a formal organization toward an effective and efficient municipal solid waste management. Such an organisation must have been registered by an authority that is recognised by the laws of the land. Such instruments are required to facilitate ccommunity participation in SWM. They are needed for enhancing regular flow of linkages within an organization and other partners (Fekade, 1994; Majani, 2000; Kisoza, 2007; and Kalwani, 2009).

2.7.4 Technological Factors

Technological factors refer to all the tools and ideas available for extending the natural, physical and mental reach of human kind. A central theme in technology is

the practical application of new ideas. This theme is better clarified by the following distinction between science and technology. Science is the quest for more or less abstract knowledge, whereas technology is the application of organised knowledge to solve problems in society (Kreitner, 1986; Wangwe, 1993; Kyessi, 2002). Within the present study area the relevant technology include: push/pull carts, wheel barrows, buckets, trucks, landfills, and capital intensive vehicles. Other important requirements are data collection instruments such as regular household surveys and census and regular researches.

2.7.5 Spatial Factors

Spatial factors are physical factors that pertain to solid waste management. They include the availability of enough planned land and considerations of distance from the collection points to the official disposal dumpsites; accessible roads for transportation of solid wastes; enough space for solid waste sorting at source; enough paths in informal settlements for the use of push/pull, and wheel barrows. To this end, land is required by residents as capital for various MSWM activities including temporary dumpsites, for the purpose of infrastructure development and for construction of recycling industries or factories, however, the cost of capital have to be mobilized (Kyessi, 2002; UN-Habitat, 2007).

2.7.6 Financial Factors

Financial factors refer to resources in the form of cash which may arise from community contributions through self-help initiatives, internal and external donations, user service fees, and subsidies from central and local governments.

2.8 Summary

The above literature review has revealed diverse experiences on solid waste management across the world. On one hand, it has been revealed that, the convectional approach has not been able to mobilize adequate resources for effective and efficient solid waste management in situations of urbanization under poverty. On the other hand, it appears that, local resources mobilization toward sustainable solid waste management in poor urban settlements is an alternative approach which gives some hope of greater success. It seems to be the case due to the following reasons:

Organizationally, the following four themes emerge from the above literature review: Firstly, participation of residents in target districts is a decisive factor in initiating and operating the systems. A sense of identification and ownership is in particular necessary in those cases which are depending on the input of residents. Also, in case of waste management and sanitation, the value of local ownership cannot be undermined.

Secondly, modern types of organization, such as clubs, CBOs, and associations, usually provide a more effective basis for organizing waste management than traditional forms (councils of elders, clans, caste groups etc.). The best example, are NGOs in Benin where such modern organizational structures are existing.

Thirdly, it should be noted that all participants are suitably trained thus; actors are able to negotiate and cooperate. Referring to positive responses for example, visiting projects can play a highly motivating role in local resources mobilization towards

sustainable solid waste management. Because, in all tested regional countries of sub-Saharan Africa successful projects have usually established vertical and horizontal linkages to other groups and state authorities.

Financially, the following two key themes emerge from the above case studies: Firstly, some successful projects finance their running expenses through fees, but the ways they are raised vary greatly. Directly linking payments to usage is an exception. Indirect payments, through taxes or other fees, are more common. And, none of the project examples has secured complete cost recovery. Secondly, willingness to pay mainly depends on the extent of resident's participation and their identification with the system. Benefits are not appreciated until they are experienced at the individual level. In this case, for example, functional sewage system is often only felt by the community as a whole until individual sanitary linkages provides an immediate personal improvement.

Technologically, it appears that successful technical systems meet the following fundamental criteria: Firstly, they provide services comparable to conventional systems, but at a lower price, or provide higher quality at the same price. Secondly, they are adapted to the level of technical expertise and organizational capabilities of the inhabitants and other project stakeholders. Thus, equipment and installations must be easy to maintain. Finally, the larger the project area (or envisaged project area), the more systematic and rational the technical solutions should be. In this way therefore, practical experience is a prerequisite for the successful application of technical systems or their use in different situations.

These global experiences can possibly be emulated in Tanzania in a way that influences local communities to participate fully in municipal solid waste management for their livelihood and betterment of the environment.

Thus, within the Tanzanian context, there is a need for examining on how efficiency and effectiveness of solid waste management can be improved through local resources mobilization. Such an examination should seek to show how various dimensions of local resource pool would contribute to effective solid waste management. These dimensions include: physical, financial, social, economic, legal, institutional, spatial, political, cultural and other resources.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides the research methodology which was used to conduct the present study. To this end, the following issues are discussed: research strategy; design and process; location and description of the study area; population and sampling procedure; methods of data collection; methods of data analysis and presentation; and limitations of the study.

3.2 Research Strategy

According to Yin (1994:15) and Saunders *et al* (2000), there are five research strategies in the social sciences. These are experiments, surveys, archival analysis, histories and case studies. However, due to the nature of this study, two theories were employed that is, theory testing approach which entails deductive reasoning and a theory building approach which entails inductive reasoning. In theory building the research begun with observations and used inductive reasoning to derive at relevant data. Also, this theory attempted to uncover an attribute that was common to all observations. This form of theory building entails asking whether the observations in a particular case had a more general factor, or how the observations fitted into a pattern or background to this study.

On the other hand, a theory testing approach used relevant theoretical propositions to guide which observations to make from the general case to particular cases. Such combination of theories, observations, inductive and deductive reasoning had to provide a positive test of which strategy was adequate and fitted to reach abductive

reasoning. Following, these facts a multi-case strategy has been adopted supplemented with abductive reasoning.

3.3 Research Design and Process

3.3.1 Research Design

A research design is a decision matrix which responds to the aspects of what, where, which, when, how much, and by what means as they pertain to a research problem. Specifically, this roadmap answers the following questions: What is the study about? Why is the study being made? Where will the study be carried out? What type of data is required? Where can the required data are found? What periods of time will the study include? What will be the sample design? What techniques of data collection will be used? How will the data be analyzed? And, in what style will the report be prepared? In short, we can divide the research design to include: philosophical assumptions; approaches; strategies; methods; time horizons; techniques and procedures (Kothari, 2004; Saunders *et al*, 2000).

Based on this understanding, and in light of the nature of the data required by the research problem under study, this research adopted a mixed research paradigm. That is, it predominantly collected qualitative data which was then complimented by the quantitative data. The qualitative paradigm was used in data collection in order to fully capture narrative facts concerning SWM constraints and opportunities in the study area. Since the case study design allows the subject matter to be studied in all its dimensions and ramifications, for this study, the mixed research paradigm was aligned with multiple case study design.

3.3.2 Research Process

A research process consists of a series of actions or steps necessary to effectively carry out research and the desired sequencing of these steps. For an ideal research process, these steps are as follows: formulating the research problem; extensive literature survey; developing the hypothesis; preparing the research design; determining sample design; collecting the data; execution of the project; analysis of data; hypothesis testing; generalization and interpretation; and preparation of the report (Yin, 2001).

Accordingly, this research started with the identification of the research problem, which largely also depended on the author's background and research motivation, followed by the formulation of research objectives and questions based on the comprehensive theories and concepts applied in this research.

Then rapid appraisal survey (RAS) was employed under which it was done in two stages: stage one was about general study for the municipality and stage two was about in-depth study in selected sub-cases. Based on the above logistic a conceptual framework was developed to which the study was anchored. This was followed by preparation of the research process. Case study areas were then selected plus live and dormant actors, by using developed selection criteria, and the reconnaissance survey was conducted including setting interviews criteria, sample selection criteria, and finding base maps and updating them. This was done after identification of the methods of data collection and data analysis techniques. Finally, summary and conclusions, recommendations, operational policy implications, and areas for further studies were drawn.

In short, the research process of this study which represents the whole master plan is provided under Figure 3.1.

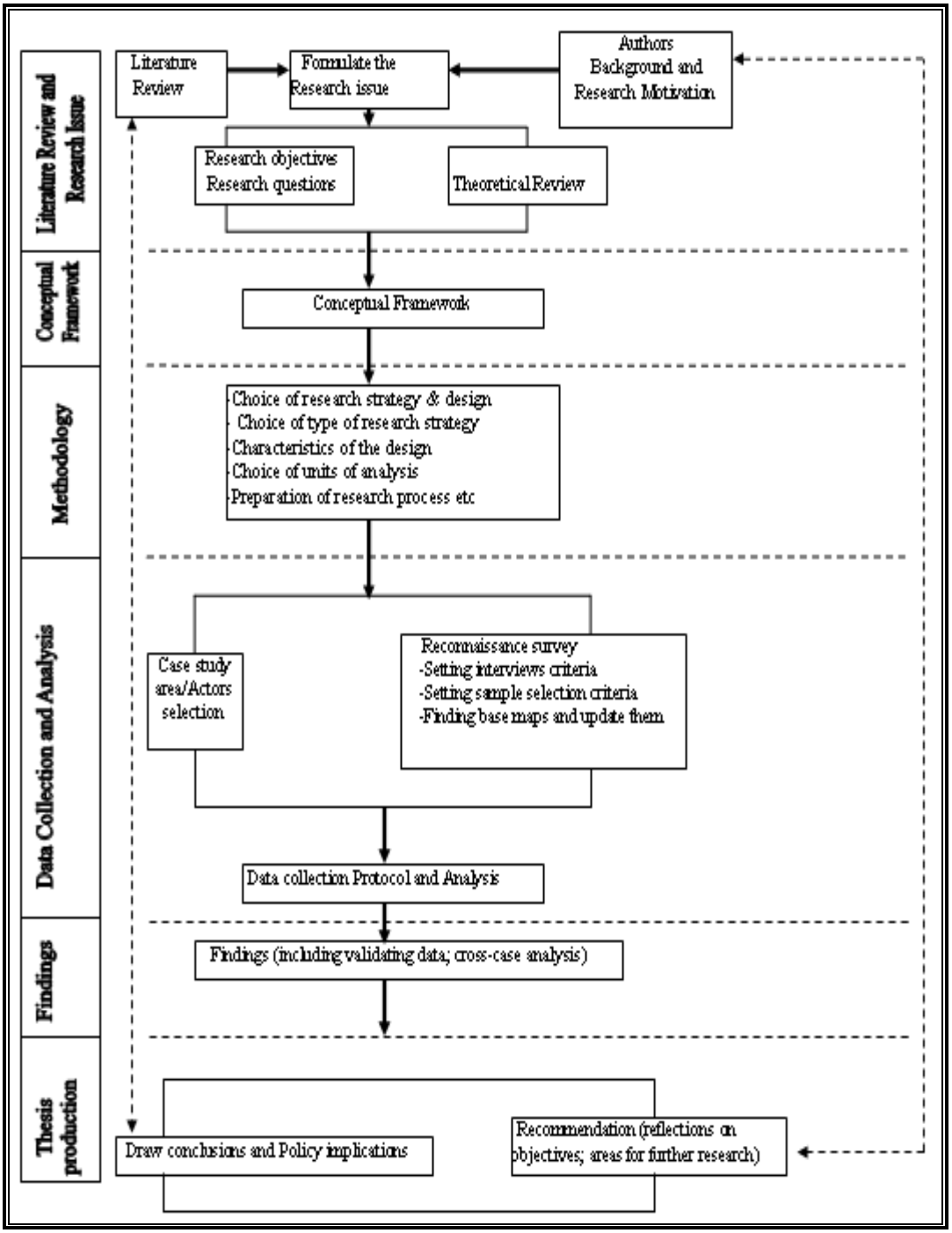


Figure 3.1: The Research Process

Source: Own construct

3.4 Selection of the Study Area

Minyoi (2007:22) asserts that identification of sub-cases logically enables the researcher to gain access and establish relations with potential stakeholders which would likely result in the refinement of the research parameters. Thus, in order to ensure research validity and reliability, proper unit of analysis, construct validity, dependability and triangulation, three sub-cases were identified based on the following modes of local resource mobilisation: *public- private partnership, local community participation and formal non-governmental organization.*

Through a RAS, *public - private partnership (PPP)* was spotted in Kawe Ward. The franchising system in Dar es Salaam City was established in 1993/1994 under DCC solid waste management and disposal by-laws, which was geared towards improving City's environment. By then Kinondoni Municipality adopted this system and Kawe Ward was one of first to practice the same. Thus, this study picked Kawe Ward in order to examine the long experience of public - private partnership in solid waste management. However, apart from employing PPP under selection criteria was also the poorest Ward in regard to effective and efficient local resources mobilization towards sustainable SWM in Kinondoni Municipality.

Through a RAS, l*ocal community participation was spotted in Sinza Ward.* It has been clear that the direct involvement of citizens in environmental management is one of the most effective ways for ensuring that improvements in environmental quality occur (Word Bank, 1997). Instruments to achieve this include information disclosure; support to formal and informal organizations etc. *(ibid*). Based on these

facts Sinza Ward seemed to be a rich case for examination of level of community participation through informal organizations in solid waste management.

Finally, through a RAS, *formal non-governmental organization* was spotted in Hanna Nassif Ward. This Ward is the founder of formal NGOs in solid waste management in Dar es Salaam City hence in Kinondoni Municipality. This approach was adopted since 1990s in the area of study thus; this was a rich case to draw its experience. The manner in which RAS was conducted for the purpose of selecting these sub-cases is discussed below.

3.4.1 Criteria for Choosing a Given Type of a Case Study

Yin (2008) argues that, the selection of sub-cases should follow either literal replication criteria and/or theoretical replication criteria. Literal replication entails choosing cases that have similar settings and are expected to achieve similar results. The theoretical replication approach is used when cases have different settings and are expected to achieve different results. This means that, each case must be carefully selected so that it either predicts similar results (a literal replication) or predicts contrasting results but for predictable reasons (a theoretical replication). Predictable reasons would entail predefined theoretical propositions that provide examples of polar types, where the two poles subscribe to competing theories (Peterson, 1998).

More precisely, this implies that, within a multiple case design, each site or case should be considered as an experiment in itself, where subsequent sites are used either to confirm or refute previous findings. Sites should therefore, be selected if

they are expected to yield similar results (literal replication) or on the contrary, if they are expected to yield completely opposite results (theoretical replication) according to the theory. Thus, cases may be chosen to replicate previous cases or extend emergent theory, or they may be chosen to confirm or falsify at least one set of competing theoretical propositions and hence provide grounds for the researcher to side with one of the predefined theoretical poles (Eisenhardt, 1989).

In the present study, the cases of Kawe, Sinza and Hanna Nassif were chosen based on the assumption that they are similar, and hence constitute paradigm cases or typical cases in so far as PPP as a strategy for LRM towards SSWM is concerned. On the other hand, the Kindondoni Municipality, when viewed as an actor before the introduction of PPP in 1994, constitutes a polar type relative to the cases of Kawe, Sinza and Hanna Nassif Wards which are on the opposite pole.

3.4.2 Framework Used to Select Study Sub-Cases

Based on the nature of this study, the researcher decided to adopt both literal and theoretical replication strategies of data collection and analysis. To this end, for the purpose of making a rational choice of Wards which constitute polar sub-cases within Kinondoni Municipality, a RAS tool was designed and employed. Following Kyessi (2002:120) and Msangi (2005) a number of selection criteria for this purpose were designed. These are elimination and/or inclusion criterion. According to Flyvbjerg (1999) and Patton (1987), in the selection of a case, one must consider information rich cases that will generate enough information/data and where a researcher can learn a great deal about the problems under

investigation. In light of this understanding, four conditions had to be fulfilled by a Ward in order for it to be selected for further detailed study. The conditions carried different weights ranging from 2 to 10 points as shown in Table 3.1 below. The conditions are as follows: *presence of organised system of solid waste management; absence of organised system of solid waste management; solid waste management fees/rates established; and presence of computerised data on households.*

Table 3.1: Conditions for Wards Inclusion in the Detailed Study

No.	Criteria	Points
1.	Presence of organised spatial system of solid waste management	10
2.	Presence of computerised data on house hold	6
3.	Solid waste management fees/rates established	4
4.	Absence of organized actors in solid waste management	2

Source: Own construct

These criteria were used to implement a RAS in all twenty urban Wards of Kinondoni Municipality. The ultimate scores for each Ward were computed, and they are summarised in Table 3.2.

From the weighting matrix above, three Wards scored the maximum points of 21 each. These were Kawe, Sinza and Hanna Nassif. Four Wards scored 15 points each. Five Wards scored 18 points each. Four Wards scored 12 points each. The rest scored 10 points each. Due to resources constraints and for the purpose of facilitating literal replication logic, the first three Wards in the first quartile were chosen for further investigation. These are Kawe, Sinza and Hanna Nassif Wards. The purpose was to make a comparative analysis on how the following modes of

LRM impact the effectiveness and efficiency of SWM in the municipality: public-private partnership (PPP) through contracts, CBO participation and formal non-governmental organizations. Table 3.3 below shows the alignment between the selected Wards and the modes of LRM to be investigated in each Ward.

Table 3.2: Weighting Matrix

No.	Ward Name	Weighting per condition				
		1	**2**	**3**	**4**	**Total**
1.	Kawe	10	6	3	2	21
2.	Sinza	10	6	3	2	21
3.	Hanna-Nassif	10	6	3	2	21
4.	Mwananyamala	10	0	3	2	15
5.	Manzese	10	0	3	2	15
6.	Msasani	10	0	3	2	15
7.	Makurumla	10	0	3	2	15
8.	Ubungo	10	6	0	2	18
9.	Mikocheni	10	6	0	2	18
10.	Makumbusho	10	6	0	2	18
11.	Mabibo	10	6	0	2	18
12.	Kinondoni	10	6	0	2	18
13.	Tandale	10	0	0	2	12
14.	Ndugumbi	10	0	0	2	12
15.	Kimara	10	0	0	2	12
16.	Kijitonyama	10	0	0	2	12
17.	Mzimuni	10	0	0	0	10
18.	Makuburi	10	0	0	0	10
19.	Mburahati	10	0	0	0	10
20.	Kigogo	10	0	0	0	10

Source: Own construct

Table 3.3: Selected Case Study Areas

No.	Ward	Mode of LRM	Remarks/Purpose
1.	Sinza	Local community participation (NGOs / CBOs)	Sinza Ward was a rich case for examination of the level of community participation in resources mobilization and informal organizations in solid waste management since 1997.
2.	Kawe	Public and private partnership	The purpose was to examine the long experience of public -private partnership in resource mobilization for solid waste management which existed since 1994.
3.	Hanna Nassif	Formal NGOs/CBOs	Hanna Nassif Ward was the founder of formal NGOs in solid waste management in Dar es Salaam City since 1990s by using locally mobilized resources.

Source: Own construct

3.4.3 Justification of the Selected Case Studies

The three sub-cases are conceptually distinct and stand-alone, yet related in the following manner: *The Sinza case study provided an answer to the question of what are the potentialities of local community participation towards maximum implementation of the principles of ISWM in Kinondoni Municipality?* The Kawe case study provided an answer to the question of *what are the potentialities of PPP towards maximum implementation of the principles of ISWM in Kinondoni Municipality?* And the Hanna Nassif case study provided an answer to the question of *what are the potentialities of formal NGOs towards maximum implementation of the principles of ISWM in Kinondoni Municipality?* Thus, for this purpose Figure 3.2 and 3.3 below provides the location of Kinondoni Municipality in Dar es Salaam City and selected sub-cases in the study area.

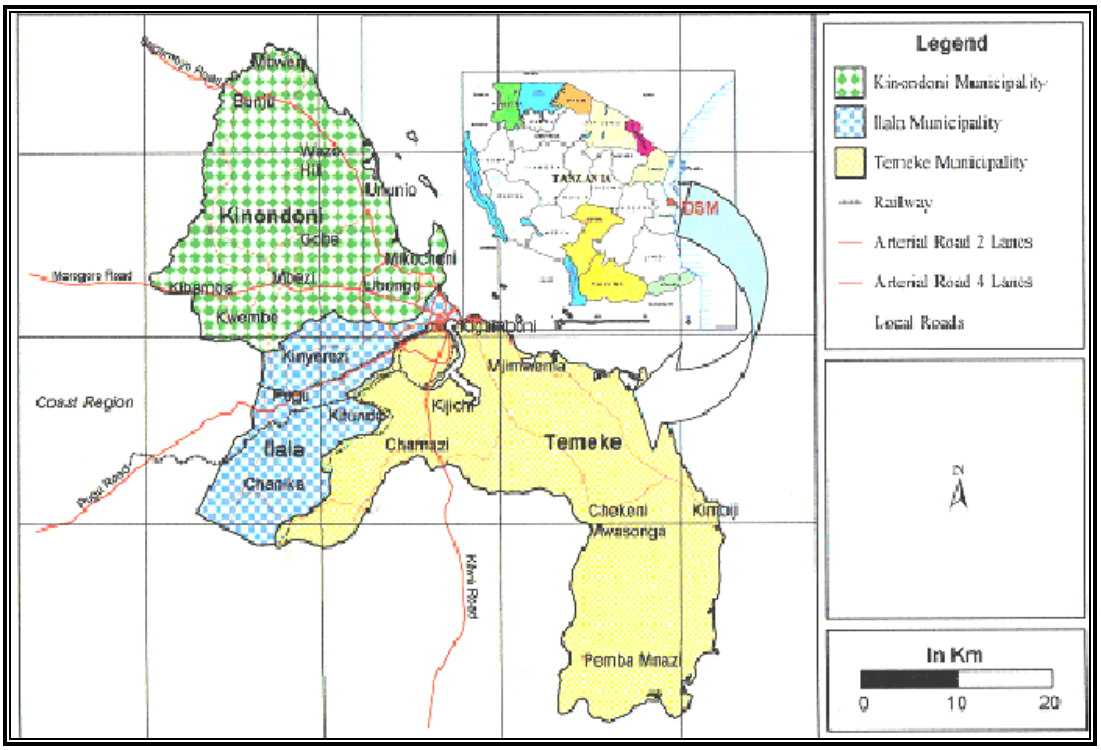


Figure 3.2: Location of Kinondoni Municipality in Dar es Salaam City

Source: DCC, 2007

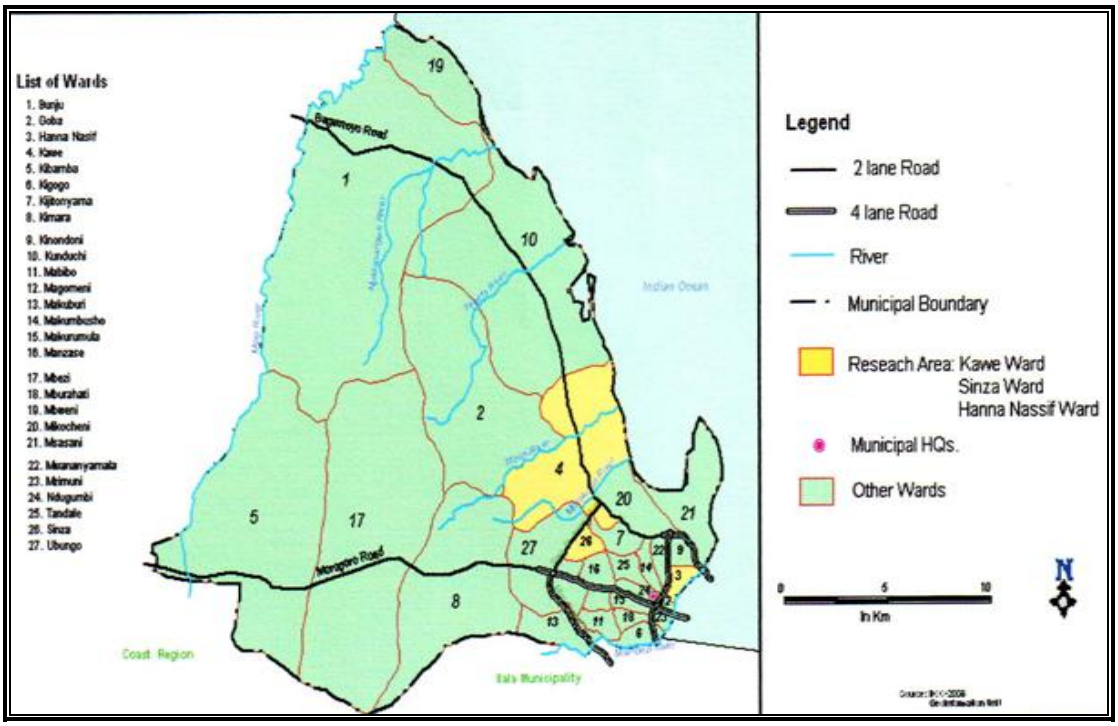


Figure 3.3: Kinondoni Municipality Wards Administrative Boundaries

Source: Kinondoni Municipal Council, 2008

3.5 Sample design and Smallest Unit of Analysis

3.5.1 Sample Design

A sample is a small number of respondents who are chosen to be true representatives of the population from a selected study area. Thus, a sample is a selection of some parts of the population on the basis of which judgment is made; small enough for convenient data collection; and large enough to be truly representative of the population from which it had been selected (Kothari, 2004). On the other hand, sampling procedures are those techniques used to choose respondents and the study area *(ibid*).

Thus, for the purpose of this study two steps were executed in sampling the respondents within the limits of the study areas, namely, Kawe, Sinza and Hanna Nassif Wards, as already selected through RAS.

Firstly, various stakeholders in SWM were classified into six categories. *These are individuals having experience in the private contracting of SWM services; individuals having long experience in re-cycling factories/industries; and individuals having some professionalism in SWM. Other categories are individuals from CBOs/NGOs members who are SWM service consumer and/or providers; individuals who are heads of households which are part and parcel of the study area; and individuals who scavengers in the study area.*

Secondly, for each class, various sources were used to estimate the possible maximum sub-population. And thirdly, following Kothari (2004) who asserts that a sample must be around 5% of the total population, at least 5% for each of the

possible sub-populations were attended for data collection either through questionnaires, interviews or focus discussion groups. Table 3.4 shows the results of this sampling procedure.

Table 3.4: Magnitude of Sample Selection in the Study Area

S/N	Type of Sample	Key characteristics of respondents	Possible maximum sub-population	Number interviewed/questionnaires	Remarks on Possible maximum sub-population
1.	Existing and former private contractors	Those with long experience in SWC in the area of study	280	14	Based on questionnaires
2.	Existing and former re-cycling factories	Those with long experience on re-cycling	320	16	Based on questionnaires
3.	Existing & retired key informants	Professionals in SWM	780	39	Based on interviews and questionnaires
4.	Formal & informal focus groups	Majority of CBOs/NGOs members	720	36	Based on interview with Social Welfare Office at Kinondoni Municipality
5.	Head of Households	Residents in the area of study	2400	410	Based on Tanzania's 2002 census
6.	Scavengers	Conducting SWM/SWC activities in the area of study	2000	120	Based on physical observations and personal discussions
Totals				**635**	

Source: Field work, 2008

3.5.2 Units of Analysis

A unit of analysis is defined as the addressed key factor a researcher sets out to investigate and comes back in the end of the study with evaluated knowledge about it

(Kyessi, 2002). This study treated a neighbourhood of households where SWM was carried out by residents in collaboration with all relevant actors for effective and efficient SWM services as a unit of study. This decision was significant due to the fact that it would allow the exploration of various aspects relating to community participation in SWM through households, individual professionals with long experience in LRM and SWM, recycling industries/factories, organizations (contractors) engaged in SWM in the study area. This decision included all mandated authorities/institutions in SWM, international organizations involved in SWM, and other formal and informal actors (scavengers) who were part and parcel of SWM in Kinondoni Municipality.

3.6 Case study Protocol

Case study protocols contain the instruments and the procedures and general rules that should be followed to control the *contextual environment* of the studies. Controlling the contextual environment is an important consideration in the design and application of qualitative research approaches in case study research designs. For this research therefore, a case study protocol was developed in order to increase the reliability of the study. It also, became the guide for carrying out the investigation efficiently. It was considered that the essential components of a protocol are: an overview of the in-depth case study; data sources; data collection methods; and data analysis procedures; and a guide for case study report (Yin, 1994).

3.6.1 Overview of the in-Depth Case Study

It was decided by the researcher that for every in-depth case study a brief overview showing details on demographics, infrastructure, and population should be presented

first. These overviews pertain to the following in-depth cases studies: Kinondoni Municipality as whole prior to the advent of PPP in 1994 on one hand, and on the other hand, Kawe, Sinza and Hanna Nassif Wards after the advent of PPP.

3.6.2 Sources of Data

For the purpose of facilitating the above impact analysis, the following sources of data were used: documentation (memoranda, written reports, articles in the mass media, environmental legislation especially on solid waste, contract specifications between agents and the municipality, and addenda); archival records (organizational records, maps and charts of the geographical characteristics of Kinondoni and relevant neighborhood maps, formal studies or evaluations, newspaper clippings and commentaries in the mass media, minutes of meetings, letters administrative documents); questionnaires (closed and open questions); direct observations (site visit to the landfill in Kinondoni/routine visits to the city), and participants-observations (being residents in Kinondoni Municipality).

3.6.3 Data Collection Methods

Data for this study was collected through four methods, namely, documentary review, questionnaires, interviews, focused discussion groups and physical observations. The relevant tools in question are briefly discussed in subsequent sections.

(a) Field observation

Field observation was considered as one of the main sources of information from the study area. Through observation, ongoing activities including solid waste management were documented.

(b) Focus group discussions

These were carefully planned discussions designed to obtain perceptions on local resources mobilization towards sustainable SWM in Kinondoni Municipality and elsewhere in Tanzania. The researcher was responsible for taking field notes during the discussions which were guided by predefined questions. Some questions were closed while others were open-ended. The participants included CBOs/NGOs leaders, individual academicians who were competent in SWM particularly those at the Ardhi University, and some private operators in the same field. Table 3.5 below depicts focus group observations.

Table 3.5: Focus Group Discussions (FGD)

SN	Group category	Number of members	Remarks
1.	CBO/NGOs leaders	10	Lack of enough resources and SWM decentralization
2.	Faith Based leaders	4	Inaccessibility of SWC points; less collective interests and patriotism; and remote political willingness
3.	Ward level political leaders	6	Lack of community awareness and involvement; and unnecessary ideological differences
4.	Environmental experts	6	Ineffective laws on SWM; poor infrastructure; and centrally selection of Pos
5.	Long experience Pos	10	Incapacity of LGA to manage SWs; long dumpsites distance; lack of modern technology; and some of the re-cycling factories are invisible or in the back yards.

Source: Field work, 2008

(c) Interviews and questionnaires

The in-depth case study questions form the heart of the protocol. This is a set of substantive questions reflecting the actual inquiry (Yin 1994). For this reason, several interview questions were developed based upon the concepts in the theoretical framework and the research questions. These interview questions, given

in Appendix 1.10 of this thesis, were used in all in-depth cases for data collection purposes. Specific respondents included the Kinondoni Municipal Director, key municipal solid waste management officers, relevant Wards Executive Officers, *Mitaa* Chairpersons, and some selected stakeholders. In concretizing the collected information the key informants were identified from UN-Habitat Dar es Salaam office, ILO Dar es Salaam office, DCC, KMC, and CBOs/NGOs. Table 3.6 summarises the key respondents.

Table 3.6: Key Informants Interviewed

No	Key informants	No. inter-viewed	Remarks
1.	UN-Habitat (Tanzania)	1	Programme Manager
2.	ILO- Dar es Salaam Office	1	Resource Department Officer
3.	NEMC Officials	2	Legal Department Officials
4.	Local Government Leaders (DCC)	5	SWM Department Officials and Accountant
5.	KMC Officials	2	KMC Director and Accountant
6.	KMH and WMD Officials	4	SWM Department and Operations Officers
7.	LGR Official	1	LGR Manager
8.	Kawe; Hanna Nassif and Sinza Wards Officials	15	All WEOs and *Mitaa* Leaders
9.	Kawe Ward Contractors	2	Private Operators' Managers
10.	Sinza CBOs Officials	2	Two Chairpersons
11.	KIWODET Officials	2	Chairperson and Secretary
12.	Umbrella NGO Officials	1	Program Manager
13.	OUT Lecturer	3	PhD in Environment
14	Totals	39	Informal Facilitators

Source: Field work, 2008

For convenience, the interview protocol was divided into two different types of questionnaires. One type was sent to the top management of the private firms and the other type sent to Kinondoni Municipality. These questionnaires were divided into six *main categories, namely the hierarchy principle; the polluter pays principle, the*

continuity principle, and effectiveness, efficiency, and efficacy principles. Some questions addressed to the management of contractors differ from those addressed to the representative of the municipality. The questions relating to the continuity of the service, for example, only concern the municipal authorities. All questionnaires started with closed questions to make the respondent comfortable at the beginning. Open questions concluded both questionnaires.

*Questionnaire submitted to the Kinondoni Municipalit; t*he questionnaire submitted to the municipality started with some questions concerning the hierarchy principle. The quantity of waste collected in m^3/day or in tons/day was enquired about. These figures provided important information on the application of the hierarchy principle in the management of solid waste in the municipality. As the amount of waste generated depends on the number of inhabitants, the socio-economic situation, the level of public awareness, etc., this quantity was to be compared with the most probable quantity of waste generated in the city.

Questions were also raised about awareness campaigns after contracting-out. Even a well designed contract without an awareness campaign might result in mutual disadvantages for both the principal (municipality) and the agent (the private sector). One way to find out if the hierarchy principle is respected is through the presence of the recycling and/or composting industry in the city irrespective of whether it is formal or informal. Furthermore, the presence of a weighbridge is very relevant to acquiring accurate information on the quantity of waste being disposed off. There were questions to capture such types of information.

The second section embraced the polluter pays principle. There were questions about how the solid waste services are financed, and the level of tax recovery. If the beneficiaries did not bear the cost of the service, there would be no incentive from their side to minimize the quantity of waste which has to be ultimately disposed into a landfill. Since not all citizens have the same economic situation in a given city, one of the questions asked relates to the fees the citizens are charged in order to ascertain whether this amount is the same for all citizens or not.

The third section concerned the principle of continuity/sustainability. It is a fact that solid waste services must be rendered in a continuous manner. This means that even if a private firm provides the service, the municipality legally responsible for the service must ensure the continuity of the service. The conditions known as the "5Ms" have to be fulfilled to ensure the continuity of the solid waste service: efficient management, sufficient manpower, sufficient money, reliable machines and material. The municipality managers involved were questioned in order to verify whether all these **"**5Ms" can be mobilized in a very short-term period or not. Therefore, the municipality was asked whether it is delivering the service in some of the other municipalities of the city or not, in order to ensure that some "5Ms" are available. Furthermore, managers were asked if they can ensure continuity about the private firms after the municipality go out of solid waste management business.

The fourth section dealt with the aspect of effectiveness. Due to the key characteristics of solid waste as public goods, it was relevant to recognize as to whether every Ward somehow benefited from the basic services provided at a satisfactory level. Thus, in order to ascertain the degree of efficacy relating to SWM

services, another question concerned the degree of satisfaction in the community. And the next section concerned efficiency. One of the arguments put forward when contracting-out solid waste services in a given city concerns the efficiency of the private sector in comparison to public administration. Hence, a question about the cost of the service before and after contracting out to the municipality was raised.

*Questionnaires applied to contractors; l*ike the questionnaire applied to the municipality, the questionnaire applied to contractors started with some questions concerning the hierarchy principle. A question was posed concerning the quantity of waste collected in m^3/day or in tons/day in order to create internal validity. The private firms were also asked if this quantity is variable over the year. Questions about awareness campaigns prior to contracting-out were also posed to the private entrepreneurs. The existence of the recycling and/or composting industry in the city had to be established, as this determines whether the hierarchy principle is respected or not. Furthermore, the presence of a weighbridge was very relevant, as it facilitated the gathering of accurate information concerning the quantity of waste disposed off.

Another question concerned the basis for payment in the private sector: lump sum or according to quantity of waste disposed off. Incentives to establish the hierarchy principle could obviously be better in achieving about the use of lump sum charge, rather than one which is calculated according to the quantity of waste disposed off, or by setting different prices for different types of waste with lower price for recyclable and treatable waste. The question whether the contract specifications take into account the treatment of waste, such as recycling or composting, was also raised in this context.

Another important issue of contracting-out was the accessibility of areas. It was relevant to establish whether the contract specifications take into account the specific characteristics of the municipality, such as road conditions, accessibility to the landfill, etc. Very often, municipalities use standard contracts, set up by the central government; although these are well-designed, they do not take into consideration the key features of a given city, such as its road conditions.

The questionnaire comprehensively tackled the issues of market failure due to asymmetric information. To capture this aspect, the exact quantity of waste collected and disposed off, any relevant addenda, and so forth were inquired into. Regarding asymmetric information and inter-organizational relationships, the following main patterns were elucidated: the frequency of transactions resulting from the relationships between principal (municipality) and agents (contractors); and the degree of accuracy of the information prior to and following the contract.

Furthermore, a question concerning the private enterprise's interest in an extension of the contract was raised. If this question was answered positively, this would be interpreted to mean that the private contractors were satisfied with their cooperation with the municipality. Towards the end of the questionnaires, there were some open questions relating to the incorporation of waste treatment in contracting-out, or whether parties believe that contracting-out automatically results in a conflict of interest with the hierarchy principle.

3.6.4 Data Analysis Procedure

For the purpose of systematic in-depth case study analyses and syntheses the pre-defined research questions were provided for guidance after a context-specific

modification. These questions were: *What is the performance of local resource mobilization towards sustainable solid waste management? Who are the actors involved in local resources mobilization towards sustainable solid waste management and what are their roles? What are the constraints and challenges in local resources mobilization towards sustainable solid waste management? And how are the motives and practical aspects entailed by local resources mobilization towards sustainable solid waste management?*

In order to assess the performance of local resources mobilization towards sustainable solid waste management as mandated by the first question, compliance with the following principles were to be checked: the waste hierarchy principle; the effectiveness principle; the efficacy principle; and the sustainability principle. In order to answer these performance related questions, the procedure below was adopted.

From a quantitative aspect, in order to make this compliance audit a success, compliance with the hierarchy principle was checked through two ratios. These were the percentage of re-cycled wastes versus land-filled waste and the percentage of composted wastes versus land-filled wastes. In order to determine some notable improvements the ratios were compared across time and across the four case studies.

Compliance with the hierarchy principle was also checked by qualitative data, through the mode of payments. In principle, if the contractors are paid per quantity of solid wastes disposed off in bulk regardless of the differences in *biodegradable, reusable, recyclable and inert wastes*, then, there can be no incentive for them to

encourage wastes minimization awareness campaigns, re-cycling initiatives, and composting of wastes. Also, quantitatively, the polluter pays principle was checked through two ratios. These are percentage of actual recovered cost versus percentage of total investment cost and percentage of subsidies from central government versus percentage of total investment cost. These two ratios allow one to determine the relative sustainability of the SWM system.

Thereafter, quantitatively effectiveness was checked through three ratios. These are total wastes generated versus total wastes collected; the population provided with collection services versus total population; households provided with collection services versus total households and length of paved streets regularly cleaned versus total length of paved streets. Finally, quantitatively, efficiency was checked by using three ratios. These are costs under municipal administration versus costs of private sector, total cost versus population served and total cost versus households served.

The above computations and comparisons were done in two stages. In the first stage, an intra-case search for patterns was executed along with the above defined analytical questions. In the second stage the analysis consisted of a cross-case search for similarities and dissimilarities along with the same questions as it was the case for a case by case analysis. In this way, convergences and divergences between case studies were identified.

3.7 Limitations to the Study

The study was intended to cover the whole of Kinondoni Municipality in Dar es Salaam City, Tanzania. However, due to time and resource limitations, only three

Wards out of twenty urban Wards had to be studied in detail. Obviously, this was a small sample for the study. A number of innovations were employed to compensate for this limitation.

First, a RAS was used in order to be able to pick the most typical cases. And secondly, a multiple case study design was employed, so as to allow analytical generalisations to be applied to the rest of seventeen Wards in Kinondoni Municipality. The RAS was a method applied in the twenty urban Wards in order to obtain useful information that could enable the selection of cases for detailed study. This method was very useful.

Actually, the multiple case study design was intended to bring in the rich experience and knowledge using the same variables in different types of solid waste management practices and settings with a view of identifying similarities and differences in the process. To this end, both quantitative and qualitative data collection methods were used in a way that equalised the fluid spots of each individual method.

Thus, due to the analytical selection process used to pick sub-cases, the sub-case studies picked stand for distinct types of solid waste management practices and settings, in this way it allowed analytical generalisations to be applied to the rest of seventeen Wards in Kinondoni Municipality.

Finally, the scatteredness of information made the study difficult. Key information on various issues were scattered in different locations and offices which were not

readily accessible as and when one wants. Thus, too much time was needed to search this information/data. For this reason, five assistants were employed to facilitate this exercise effectively and efficiently.

CHAPTER FOUR

4.0 PERFORMANCE OF SOLID WASTE MANAGEMENT IN KINONDONI

4.1 Introduction

This chapter documents the performance of solid waste management in Kinondoni Municipality prior to the advent of public-private partnerships. Thus, the chapter identifies the actors along with challenges and opportunities they face and enjoy respectively, in local resources mobilization towards sustainable solid waste management. Also, it elaborate spatial and population growth in the municipal, combined with unrealistic institutional structure for solid waste management, lack of enough resources, lack of practical legal policies, and how inefficient local organizational development has affected the status of municipal services particularly in solid waste management. Generally, this chapter shows that solid waste management problems were increasing over time with the increase in population.

4.2 Profile of Kinondoni Municipality

Government Notice No. 4 of the year 2000 issued by the President's Office, Regional Administration and Local Government established the Kinondoni Municipal Council (KMC) as an autonomous body. The move was part of the on going Local Government Reforms in the country at that time. The municipality is bordered by the Indian Ocean to the Northeast, Ilala Municipal to the South, Bagamoyo District to the North, Kibaha District to the West and Kisarawe District to the Southwest. The municipality was well linked by roads and other communication networks to the rest of the city and other parts of the country. Major road links were Morogoro Road, Bagamoyo Road, Kawawa Road, Mandela Road and Sam Nujoma

Road.

Kinondoni Municipality experiences a modified type of equatorial climate – it is generally hot and humid throughout the year with an average temperature of 29^0C. The hottest season is from October to March while it is relatively cool between May and August with temperatures around 25^0C. There are two rain seasons - short rains fall from October to December and long rains between March and May. The average annual rainfall is 1300mm. Humidity is around 96% in the mornings and 67% in the afternoons. The climate is also influenced by the Southwest monsoon winds from April to October and Northeast monsoon winds between November and March.

It was revealed that, about 360,000 residents of Kinondoni Municipality were employed in both private and public sectors. Out of these, 95% were employed in the private sector while the rest 5% were employed in the public sector. A working force of about 200,000 people was self-employed (KMC, 2008). The majority of the residents were involved in petty business, fisheries, livestock keeping and agriculture including horticulture. Only 3% of the working force was engaged in subsistence agriculture in the peri-urban areas. There were no big farms but small plots ranging from 2.5 to 6 acres. Others make small gardens around their houses in which various vegetables and root crops like cassava and sweet potatoes were grown for family food and the surplus for income generating (*ibid*).

4.2.1 Kinondoni Municipality Administrative Set-up

The Kinondoni Municipality comprised of four (4) divisions namely: Magomeni, Kinondoni, Kibamba and Kawe. These divisions were then divided into twenty

seven (27) Wards, which were further sub-divided into sub-wards commonly known as “Mitaa” (plural) or hamlets. There were 127 *Mitaa*. The Municipality also had three (3) electoral constituencies namely: Ubungo, Kawe, and Kinondoni.

The maximum municipal governing body was the full council which comprised of 48 councilors. There is various Municipal Departments; Ward Development Committees under the Chairmanship of the Councillor; and Sub-Wards (Mitaa) Development Committees. Also, there was 14 Municipal Departments, each having several sections beneath it. Thus, a top-level organizational structure of Kinondoni Municipal Council is depicted in Figure 4.1.

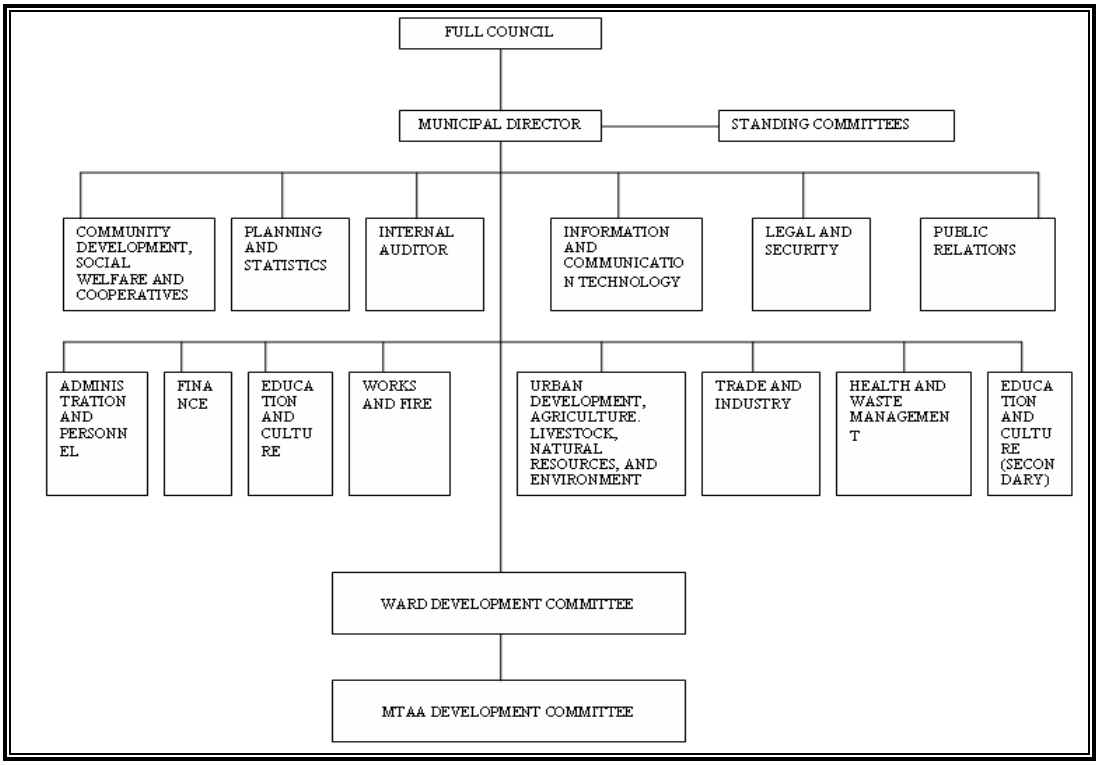


Figure 4.1: Top-level Kinondoni Administrative Set-up

Source: Kinondoni Municipal Council, 2007

4.2.2 Demography

In the 2002 census, the district with the largest population in Tanzania was Kinondoni with a population of 1,083,913. There was enormous increase of population in Kinondoni District (now KMC) from 627,416 in 1988 to 1,083,913 in 2002 which was an average annual growth rate of about 4.1% (URT, 2002). Table 4.1 below portrays projected population from 2002 to 2010 for KMC based on year 2002, at a growth rate of 4.1%.

Table 4.1: Kinondoni Municipality Projected Population From 2002 to 2010

Years	2002	2004	2006	2008	2010
Total	1,083,913	1,179,985	1,278,727	1,385,732	1,501,692

Source: URT 2002, 2006.

The trend of population increase like in KMC was a resource for supply of labour, hence an important parameter for socio-economic development. However, the growth of population increases demand for food, municipal services such as water and sanitation, energy, solid and liquid management, etc. Without a matching supply of essential municipal services provision, environmental destruction would normally be a logical outcome.

4.2.3 Spatial Factors

The total area of Dar es Salaam City was about 1,800 sq kilometres, comprising 1,393 square kilometres of land mass of which Kinondoni Municipality constitutes 531 square kilometres of the whole land mass area (URT/DCC, 2002). Apart from

such endowment, informal settlements were found in the heart of Kinondoni Municipality, and therefore are part and parcel of the urban fabric.

The informal settlements were found right from the inner of KMC, actually within half a kilometre radius such as along Msimbazi Valley and Nalung'ombe River in Magomeni Ward, Kigogo, Hanna Nassif, Ali Maua, Tandale, Ndugumbi, Manzese etc. Figure 4.2 portrays Kinondoni Municipality sequential spatial growth from 1970s to 2010.

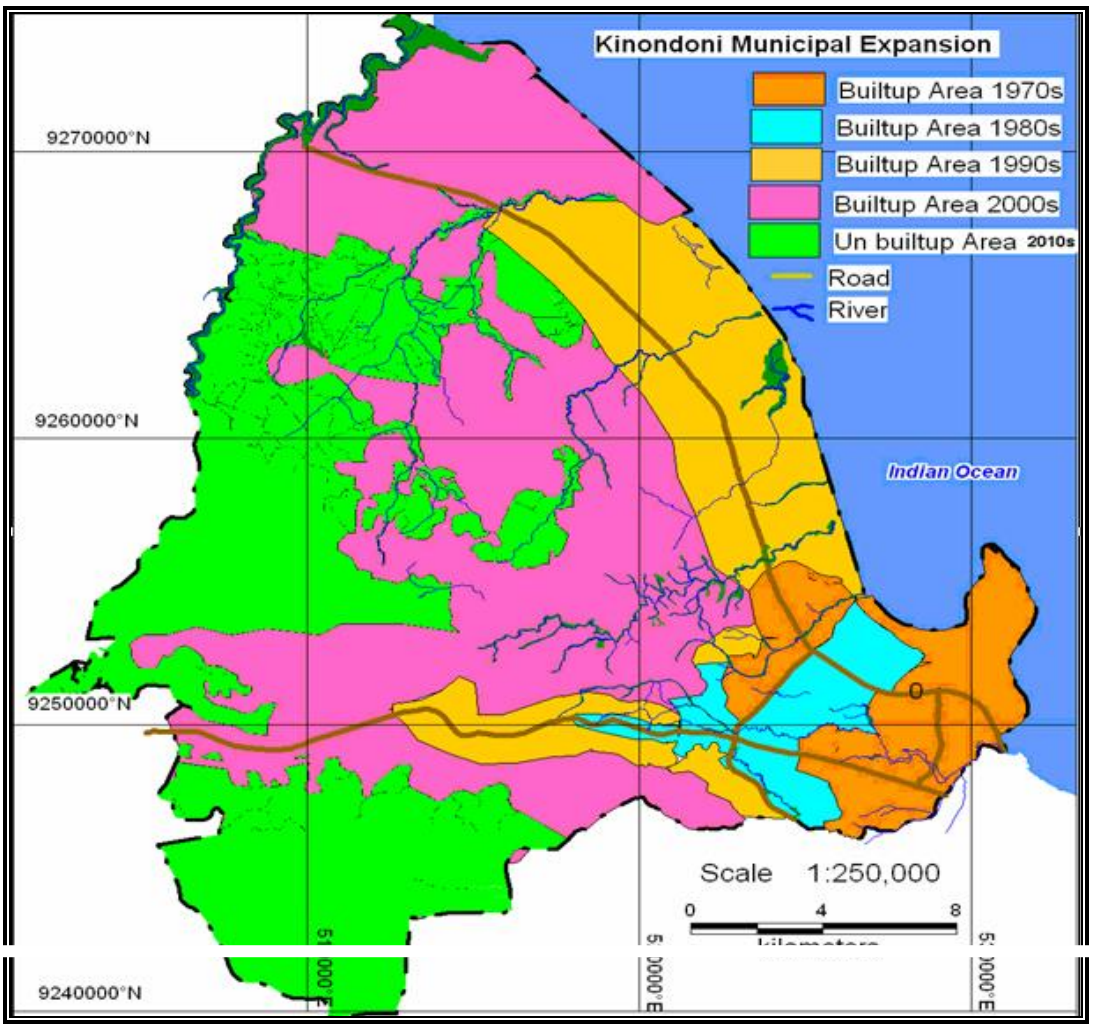


Figure 4.2: Kinondoni Municipality Spatial Expansion From 1970s-2010s
Source: Info Bridge, 2011

It is always obvious that rapid spatial expansion would render difficulties in the proper solid waste management services in Kinondoni Municipality. Also, basic infrastructure almost in all settlements was either inadequate or not available due to municipal uncoordinated development. Kinondoni Municipality expansion continued to take place regardless of efforts to provide infrastructure and amenities. The rate of urban growth and population increase outpaced the local authority's capacity to render necessary services. At the time of the study, many of the social services that were erected in the past did not seem to be improved nor extended to cater for the ever increasing municipal population. However, within these informal settlements, although in some rare cases, private individuals located some of the services such as solid waste primary dumps for community use, in order to ameliorate the scarcity of land for infrastructure. This was noted during this study in Mwananyamala Ward, around Kwa Kopa (see Plate 4.1).

Plate 4.1: Voluntary Primary Dumpsite in an Informal Settlement at Kwa Kopa
Source: Photo by author, 2008

It was revealed that, during this study KMC had no sustainable official dumpsite though solid wastes was collected and transported either to Pugu-Kinyamwezi, about 25 kilometres from the City centre or at Kigogo temporary official dumpsite, about 8 kilometres from the City centre. But, all in all the problem of affordability due to long distances for waste disposal was still unsolvable. However, the state of underdevelopment in terms of spatial factors such as lack of land in the City centre which emanated from poor planning, solid wastes service distance, poor types of equipment and tools etc. circumscribe the limits of resources available towards sustainable solid waste management.

4.2.4 Other Municipal Infrastructure Services

Physical observations revealed that the infrastructure condition in Kinondoni Municipality in terms of technical plus social services such as roads, drainage system, electricity, water supply, health, education and safety was absent or poor. Many parts of the settlements had no clear roads or footpath networks (about 50%); the drainage system was not well defined (about 50%), and where available were mainly natural drains. While many households used pit latrines or septic tanks (on site sanitation), and the solid waste management service was still poor. The same was observed by Kyessi (2002). Generally, solid wastes were burnt or left uncollected in many parts of Kinondoni Municipality. Figure 4.3 below portrays types of infrastructure including SWC; roads; footpaths; drainage and sanitation in real prevailing situation.

Furthermore, it was observed that informal settlements in Kinondoni Municipality has a high housing density, poor availability of solid waste management services

and with the highest population. A cross-examination of poor infrastructure conditions in these informal settlements was dominant in Kinondoni Municipality as earlier noted; this being due to low awareness levels on the health hazards likely to be caused by dirty environment, less affordability levels and likewise low educational levels of the residents. But, generally the authority only had no capacity to alleviate the prevailing situation.

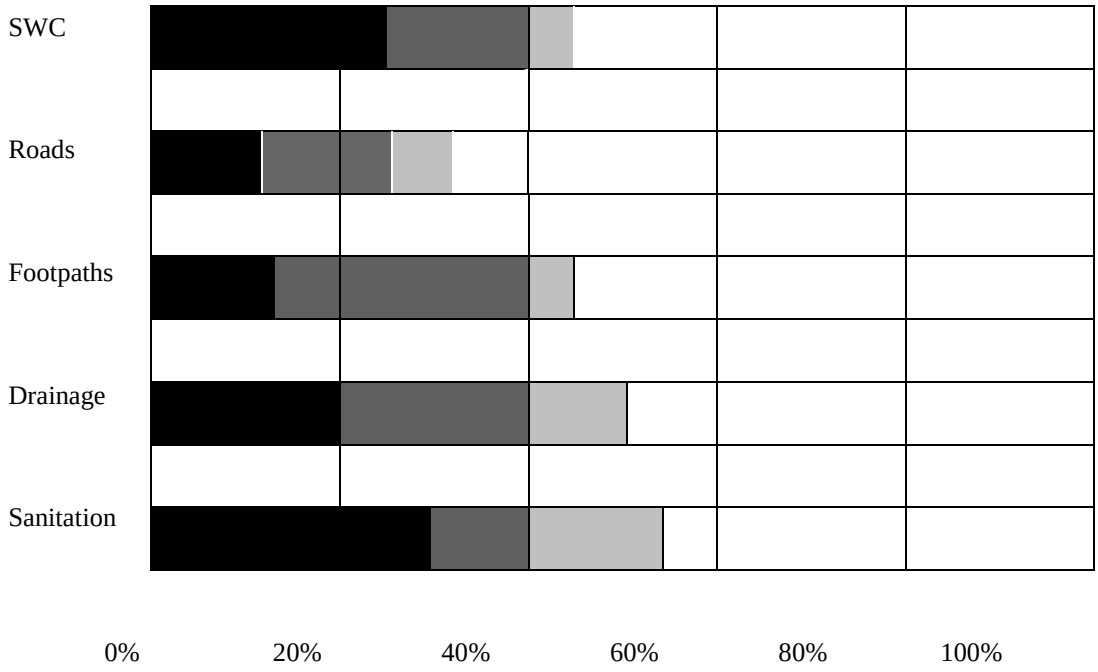


Figure 4.3: Infrastructure Conditions in Kinondoni Municipality

Source: Field work, 2008

4.2.5 History of Solid waste Management in Kinondoni Municipality

(a) Urbanization and its impact on solid waste management

It was reported from KMC in (2007) that, before the advent of privatization in 1994, the Dar es Salaam City Council (DCC) was the only authority responsible for provision of public services, including primary waste collection, temporary storage and transportation to disposal sites, streets' sweeping, manage the disposal sites, and sometimes recycle the waste. To perform these activities efficiently, the DCC was required to have a robust budget for funding SWM activities, adequate personnel and equipment for execution of these activities, etc. City residents, developers, business operators, etc, as waste generators, relied on the DCC as the sole provider of SWM services in return to taxes they paid to the government.

However, in the early 1990's, population growth in the City was extremely high due to a number of factors. One of the factors was the introduction of economic structural adjustment policies in the mid 1980's. At this point in time, Tanzania turned from a socialist economy to the market economy. This policy, attracted foreign investors who concentrated their investments mainly in Dar es Salaam City, which attracted an influx of job seekers. This situation did not go parallel with the provision of public social services that could, among other things, provide sufficient mechanism for efficient management of domestic solid wastes. This high number of population led to an increased waste generation rate, greater number of squatter areas and more people without access to the official waste collection system (KMC, 2007).

From the above report it was obvious that, while operating in such a situation under the guidance of conventional approaches, the DCC failed to provide efficient and

reliable SWM services to the growing city population. The Council was capable of collecting only between 30 and 60 tones that is 2%-4%, of the then total waste generated per day in the city (Halla and Majani, 1999b, UCLAS, 2003). For this and other reasons there was a need for devising alternative methods of SWM *(ibid).*

(b) The advent of private sector in solid waste management

According to Majani (2000), the involvement of the private sector in solid waste management was initiated under the Global Sustainable City Development Programme (GSCDP). Several Cities, including DSM, were part of this sustainable Cities network in which the GSCDP was promoting demonstration projects world-wide. The Sustainable DSM City Project (SDP) was started in January 1992 (UNCHS, 1994). In 1993 the Sustainable DSM Project (SDP) introduced the Environmental Planning and Management (EPM) process with the overall aim of supporting the DSM City Council in promotion of new partnerships among public, private, and community sectors to develop sustainable solutions to priority environmental issues (UNCHS, 1994). And one of the priority issues was solid waste management.

The SDP, through the EPM process, provides municipal authorities and their partners in the public, private, and community sector with an improved environmental planning and management capacity. The focus of the SDP in solid waste management was to support DSM municipalities to prioritize their most critical problems in solid waste management, and in so doing to bring together in working groups in particular those who were affected by the problem, those who

create problem, and those who had an institutional responsibility to manage the problem (Halla and Majani, 1999a). Before the intervention of the SDP in 1992 the first City consultation on environmental issues was held in August 1992 involving more than 200 participants, represented a cross-section of institutions in the public, private and community sector (Chinamo, 2003). The participants were exposed to an analysis of nine critical City environmental issues, some of them were: solid waste management; unplanned and un-serviced settlements; liquid waste management; managing City transportation and air quality; managing open spaces, etc.

A series of City mini-consultations were held and working groups established for each environmental issue under the overall supervision of the Sustainable Dar es Salaam City project. The working group on solid waste management adopted a five-point strategy involving the following: launching of an emergency city clean-up campaign; privatization of solid waste management services; encouraging community participation in solid waste management; encouraging recycling and composting; better management of disposal sites (Halla and Majani 1999a; DCC, 2001; Chinamo, 2003).

(c) Phase one of solid waste management privatization in 1994

Phase one started in 1994 with 10 City Wards at the City centre, after competitive bidding Multinet Africa Limited won the tender to collect waste (Halla and Majani,1999a, Majani, 2000; DCC, 2001; Chinamo, 2003). The contractor was empowered to collect solid waste collection charges directly from the service recipients. The contractor has to arrange for the necessary facilities for solid waste

collection. The contractor started to operate in September 1994 (Halla and Majani, 1997).

DCC enacted by-laws along with privatization, to cover the solid waste collection services. In the beginning the contractor performed well, collecting up to 75 percent of the solid waste generated daily in the 10 Wards. But later, this rate dropped due to contractual problems. The number of Wards served dropped to 5 and only 15 percent of waste was collected. The main reason was the non-payment from the recipients as they had previously received the free service from DCC (Majani, 2000).

(d) Phase two of solid waste management privatization in 1996

In 1996 four organizations entered to make a total of five organizations, contracted to serve four Wards (DCC, 2001). These four new organizations started their work with morale and commitment and the daily solid waste collection rates increased in these Wards, as waste heaps along streets and open spaces and market places significantly reduced. Like the first contractor these additional four organizations faced the same problem of insufficient collection charge from the residents (Majani, 2000). This was due to inadequate cooperation from the DCC in enforcement of by-laws and public awareness creation. As a result the performance levels of the organizations dropped, including the first contractor i.e. Multinet who once again had to withdraw from providing services in the five Wards of the city centre.

(e) Phase three of solid waste management privatization in 1998/1999

Experience gained in the previous two phase's strengthened institutional arrangements in favour of SWM strategy, and an independent department of SWM

was established in the DCC. The number of private organizations contracted to provide solid waste collection service increased to 65 (i.e. local company and community groups). Privatization covers 44 out of 73 wards in the city. After the private sector has been accepted to provide service, Communities Based Organizations (CBOs) were also empowered by various stakeholders to implement solid waste management.

The City and Municipal authorities, in collaboration with agencies such as ILO, UNDP/LIFE, WHO, UNIDO, DANIDA, HABITAT, and CARE International have been providing technical and other support to the CBOs *(ibid*). For example UNCHS (Habitat) collaborated with ILO, UNDP and United Nations Volunteers on the implementation of the programme in urban low-income (UNCHS, 1994). However, it was further reported that, some international organizations support the solid waste management organizations in different ways. For example, ILO supported the implementation of solid waste management activities by focusing mainly on promoting employment opportunities and income generating activities within the sector *(ibid).* These activities in turn contributed to the improvement of solid waste management and environmental cleanliness. Thus, from this background one could draw different conclusions on the involvement of private sector in solid waste management service in Dar es Salaam City, hence in Kinondoni Municipality.

4.3 Performance of Solid Waste Management in Kinondoni Municipality

Urban solid waste management in Tanzania in general, and in Kinondoni Municipality in particular, had always been a serious environmental problem and a

challenge for many years for a number of reasons. In order to put this contention in perspective, this section addresses this issue in the following sub-sections.

4.3.1 Solid Waste Generation and Collection Rate in Kinondoni Municipality

The ratio of wastes collected versus wastes generated is a good measure of the effectiveness of SWM services. If the ratio is 100% then we have the maximum possible effectiveness. As far as Kinondoni Municipality before PPP is concerned, that is before 1994 the ratio of wastes collected versus wastes generated was 10% out of 1480 tones (Majani, 2000). Furthermore, the study revealed that, by 2007 Kinondoni Municipality was generating about 2,026 tons of waste per day from various waste streams as shown in the Table 4.2.

Table 4.2: Amount of Solid Waste Generated per day in Kinondoni

No.	Waste stream	Amount generated (tones per day)
1.	Kitchen waste	646
2.	Paper waste	94
3.	Textile waste	11
4.	Plastic waste	83
5.	Glass waste	52
6.	scrap metal waste	41
7.	Grass waste	444
8.	Leather and rubber waste	21
9.	Soil and ceramics waste	11
10.	Other solid wastes	670
Total		2,026

Source: Field work, 2008

It was estimated that out of 2026 tonnes of solid wastes generated per day only 1155 tones (57%) was collected, whereby 608 tones (30%) was taken to official disposal sites. The rest was recycled, and re-used, composted, disposed onsite, burnt and indiscriminately thrown away haphazardly even in grave yards (see Plate 4.2).

Plate 4.2: Uncollected solid Waste Being Burnt Along a Grave Yard in Kijitonyama

Source: Photo by author, 2008

It was further learnt that the Kinondoni Municipality has poor information/data management system which contributes to a complicated process of settings for modern waste storage, suitable routes assignment for SWM waste equipment and tools etc., almost everywhere. The researcher further, was informed by Kinondoni Municipal SWM Department that in order to cope with the daily SWM and sanitation in the municipality, they had to launch a campaign for all stakeholders to come together to find a lasting solution to SWM problems, specifically at each Ward level. However, this campaign had no much output so far. In this regard, Figure 4.4 compares the efficiency of the municipal versus contractors in terms of

solid waste collected from 2000 to 2007.

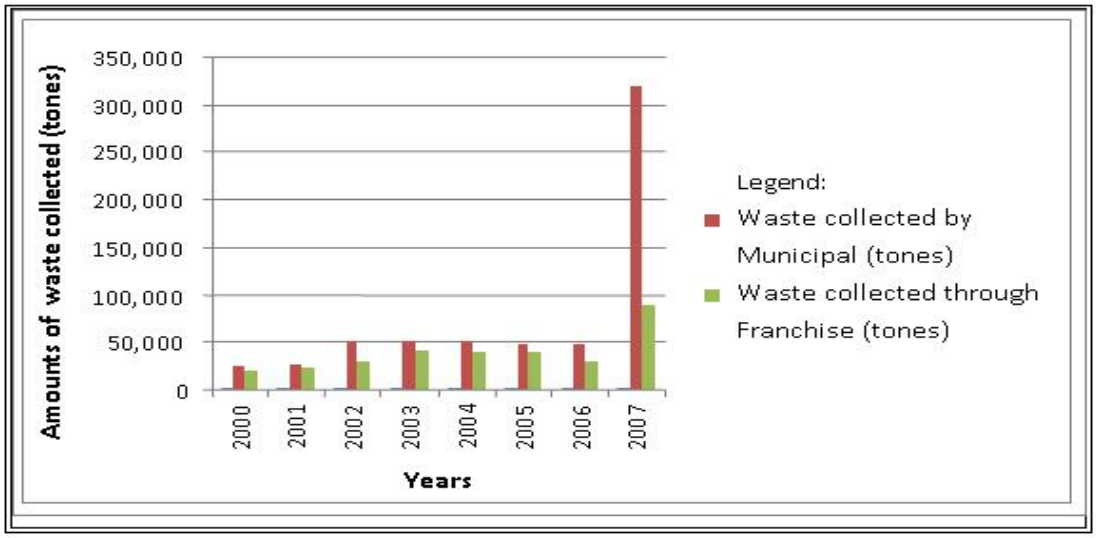


Figure 4.4: Wastes Collected by Municipality Versus Contractors in Kinondoni (2000-2007)

Source: Field work, 2008

On the other hand, Figure 4.5 presents the trend of solid waste generated, collected and disposed off to the official dumpsite in Kinondoni Municipality.

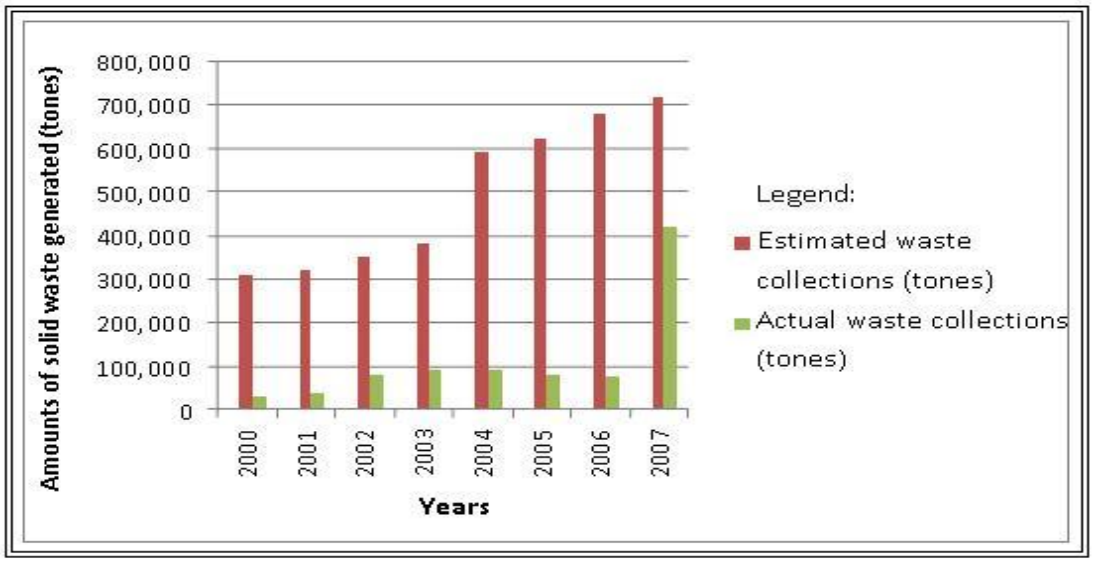


Figure 4.5: Waste Generated Versus Collected in Kinondoni (2000 – 2007)

Source: Field work, 2008

4.3.2 Waste Recycling, Composting and Dumping Ratios

This study conducted a compliance audit with respect to the wastes hierarchy principle. According to this principle, in designing waste management strategies, preference should be given to those methods which are more environmentally sound. The study was guided by the assumption that, the wastes hierarchy entails a five-step order of priority in which waste prevention has the highest priority being followed by re-use, recycling, recovery and waste disposal as the last option. From a quantitative aspect, in order to make this compliance audit a success, compliance with the hierarchy principle was checked through two ratios. These were the percentage of recycled wastes versus land-filled wastes and the percentage of composted wastes versus land-filled wastes.

In order to compute these ratios an extensive documentary review was employed. Available literature (Kironde, 1999) showed that the first dumpsite which was established after independence was located at Tabata. The Tabata dump site was established in year 1965, at that time Tabata was the outskirt of the city and no settlement patterns assumed to gain the proximity say of 200m from site. All waste collected in the city of Dar es Salaam was dumped here. In September 1991 the site was moved from Tabata to Vingunguti.

According to Ngiloi (1992), the composition of domestic solid waste dumped at Vingunguti dumpsite in February 1992 was largely comprised of organic materials. Specifically, its composition by percentage in brackets was as follows: vegetable/ putrescible (62.5%); paper (6.2%); glass (0.3%); metal (1.2%); textiles (1.2%);

plastic and rubber (1.8%); bones (0.3%); and inert matter, sand, ash, stones, pottery (27.3%). This data set implies that re-use, re-cycling and composting were rarely performed prior to dumping.

The researcher further confirmed that, at the dump site a large number of individual scavengers privately sorted out waste components like plastics, foam plastics, metals, waste wood etc. Recycling at domestic level was only sometimes done in terms of discarded consumer goods like fans, refrigerators, furniture and wood. Materials like glasses, plastics and metals were hardly recycled. Waste from the Kariakoo market was sometimes given to farmers where they used it as raw compost. Industrial waste was recycled on small amounts for examples plastics like polyvinyl chloride (PVC). Tins were used as lamps, doors and wall covers. Paper bags and cuttings were reused for manufacturing toilet paper. Car wrecks were sometimes used as spare part pools and steel iron parts for blast furnace plants (Ngiloi, 1992). When all these findings are coupled with findings from the field, the general conclusion reached by the researcher was that, in 1992, the percentage of recycled waste versus land-filled waste was 1.4% while the percentage of composted waste versus land-filled waste was 1.1%. From these findings logically implies that by 1992; the Kinondoni Municipality was not complied with the waste hierarchy principle.

4.3.3 Residents' Satisfaction in Solid Waste Management

It is believed that when the households feel that are receiving a good service, in waste management this leads to an improvement in participation also in paying collection fees. Since the residents are happy to receive a good service and discover

that their payments are used directly for the service, they might support the system and wish to continue with the service. According to Kaseva (1994) one survey was made in early, 1990s asking about 120 households if they are satisfied with the SWM service they receive. In order to test this satisfaction the following question was posed: If you receive SWM services what is your opinion of the service provided? The possible alternative responses were: very satisfied; reasonably satisfying; needs improvement; don't know; and no service received. The findings on the degree of satisfaction from SWM services in Kinondoni Municipality before PPP were as follows: about 2 (1.1%) out of 120 households the answer was very satisfying; about 13 (10.4%) out of 120 households the answer was reasonably satisfying; about 28 (22.9%) out of 120 households the answer was needs improvement; about 1 (0.4%) out of 120 households the answer was don't know; and about 79 (65.2%) out of 120 households the answer was no service received. Figure 4.6 depicts these details visually.

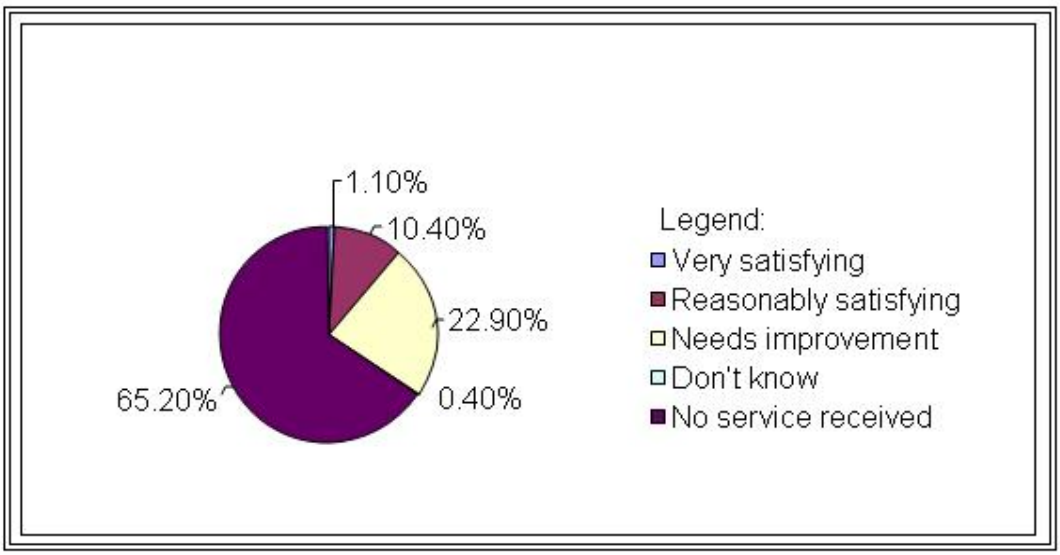


Figure 4.6: Residents' Satisfaction in Solid Waste Management Services

Source: Field work, 2008

4.4 Local Resources Mobilization Strategies Towards Sustainable SWM

This study established that, there were several problems facing Kinondoni Municipality efforts toward resources mobilization for sustainable SWM as summarized below:

4.4.1 Insufficiency of Financial Resources

It was revealed that Kinondoni Municipality obtains subsidies from the central government and collects levies from several ventures including incinerations, markets, sign boards, recreation rooms and grounds etc. In some instances it sought assistance from reputable donors such as the World Bank, ILO and UN-Habitat. Sometimes the use of locally available resources was adopted. Table 4.3 shows the percentage of municipal budget which has been allocated for SWM from 20005/06 to 2009/10.

Table 4.3: Kinondoni Municipality SWM Budget Allocations

Financial Years	Total KMC Actual Budget/Collection	Amount Demanded for MSWM	Amount Demanded in %age	Amounts Allocated for MSWM	Amount Allocated in %age	Demanded in %age
2005/06	11,981,772,250.78	768,396,920.00	6.41%	474,233,712.85	3.95	61.7
2006/07	14,814,207,753.99	858,376,000.00	5.79%	684,300,000.00	4.62	79.7
2007/08	20,570,542,455.63	988,637,000.00	11.80%	672,765,800.00	3.27	68.0
2008/09	16,621,381,678.31	2,527,558,000.00	15.20%	1,153,952,475.00	6.94	45.6
2009/10	23,636,377,183.46	3,616,700,000.00	15.30%	1,512,000,000.00	6.39	41.8
Totals	87,624,281,322.17	8,919,945,493.00	10.17%	5,586,500,150.00	6.37	62.6

Source: KMC, 2010

From Table 4.3 above it was clear that, the amount allocated for SWM in Kinondoni Municipality was almost doubled as much from 3.95% in fiscal year 2005/06 to

6.39%. However, there was an increasing gap between the actual amounts demanded for SWM from 6.41% in fiscal year 2005/06 to 15.30%. One of the informants revealed that this deficit was due to the tendency of non-prioritising SWM at municipal level leading to uncollected wastes at the local levels.

4.4.2 Lack of on-site Storage Facilities

The study revealed that vital facilities such as on-site storage are considered as one of the biggest problems in Kinondoni Municipality's popular market places. These market places include Tandale, Kinondoni, Mwenge, Kawe, and Mwananyamala. The drainage system either did not exist or were almost obsolete, while collection of garbage was haphazardly done, leaving huge pileups of stinking filth everywhere. All these market places in those days were sure candidates of health hazards such as cholera; the situation was even worse when it rains. The storage volume which is necessary to provide for either public or domestic wastes is a function of the generation of waste, population size and frequency of collection. The availability of whatever storage whether plastic buckets and bins with lids or depots and fixed storage bins, would be effective and efficient depending on the type or style of SWM put in place. Though by small degree, the research further revealed that, solid waste collection on site in the study area undergoes some phases or processes prior to the final collection.

4.4.3 Inefficient use of Bin System

These included open metal bins, i.e. dust bins with lids and empty oil drums without lids - common types of on-site storage in the municipality. Bins of various sizes were located along the roads and sometimes around apartment blocks, to serve as final

storage prior to collection. It was reported that frequency on the use of these available bins was very minimal (i.e. may range between once to thrice per week) due to little local communities awareness for the use of them. However, other problems with these bin systems apart from their limitations in number and small volumes to hold all the refuse produced within the collection period of five to seven days, most of them were not equipped with tight closing lids to prevent stench, flies and rats, and some of the bins are made of unsuitable materials and only few storage sites have concrete floors.

4.4.4 Enclosures Systems

During this study one could find only a few enclosures in Kinondoni Municipality built of bricks but some without roofs. The study further, found out that in most settlements in Kinondoni they commonly used containers made of galvanized steel with lids particularly along the main roads, and discarded drums mostly without lids. This system could be effective and efficient if all enclosures are engulfed and roofed.

4.4.5 Inadequacy of Trailers on Collection Points

The key municipal SWM officer reported that about fourteen out of twenty urban Wards in Kinondoni Municipal Council were using trailers as modern collection points. The system was feasible and acceptable to almost all local communities though it was betrayed and affected by inconsistency of collection vehicles. Users of this service informed the researcher that sometimes it could take as long as some weeks before wastes are collected. Some communities had to create another (see Plate 4.1) informal dumpsite in the affected areas. When the relevant authority was contacted, it claimed that this happened due to lack of enough tractors to follow

those trailers daily and even the available ones are ramshackle.

4.4.6 Inadequacy of Trained Personnel/Human Resources

This study was informed that Kinondoni Municipal Health and Waste Management Department (KMH and WMD) was organized into four sections – solid waste management, liquid waste management, pollution control, and disposal management. During this study, however, the Waste Management Department had only thirty employees instead of the required one hundred and sixty two; so there was a shortage of 132 employees, see Table 4.4.

Table 4.4: Level of Staff Deployment at KMH and WMD

S/N	Position/Job title	Number of personnel			
		Required	Available	Surplus	Shortage
1.	Municipal waste management officer	1	1	0	0
2.	Solid waste disposal operations officer	1	1	0	0
3.	Solid waste management officer	1	1	0	0
4.	Asst. SWM officer-control of refuse collection trailers	1	1	0	0
5.	Asst. SWM officer-major roads cleaning	1	0	0	1
6.	Waste management officer-coordination of working group plans	1	1	0	0
7.	Liquid waste management officer	1	0	0	1
8.	Wards waste management officers	27	10	0	17
9.	Settlements/*Mitaa* waste management officers	113	0	0	113
10.	Secretary	1	1	0	0
11.	Office attendant	1	1	0	0
12.	Drivers	10	10	0	0
13.	Cleansing attendants	3	3	0	0
14.	Total	162	30	0	132

Source: Field work, 2008

The personnel status in Kinondoni Municipal Health and Wastes Management Department revealed that there was a shortage of one assistant SWM officer responsible for major roads cleaning, one liquid waste management officer, seventeen wards waste management officers, and one hundred and thirteen mitaa waste management officers. In total the municipal suffered a shortage of one hundred and thirty two officers. However, key informant's reported that SWM was a big problem in Kinondoni Municipality because almost all private operators and the municipality itself have been facing a very huge deficit in terms of human and financial resources, and physical equipment and tools for efficient SWM.

4.4.7 Inadequacy of Working Equipment/Tools

As one of the dependable resources in SWM, Table 4.5 summarizes the status of SWM working equipment and tools as recorded during the study. It was noted that, one category of the equipments are trailers which, under normal circumstances, were to service informal settlements.

Kinondoni Municipality had a very serious problem in SWM working tools and equipments. Table 4.5 reveals that there was a huge shortage in the area of vehicles and machines including trailers, tractors, bulldozers, tipper trucks, road sweeper machines, and grass cutting machines, open drains cleaning machines, tree pruning and sets of cleaning tools. All these resources above are the heart of effective and efficient SWM everywhere.

Table 4.5: Level of KMC and POs-SWM Working Equipments and Tools

Sections	Types of working tools	Required tools	Available tools	Surplus tools	Shortage of tools
Municipal wastes management office	Computer with printers	4	2	0	2
	Photocopier	1	0	0	1
	Monitoring vehicle	3	0	0	3
KMC and POs refuse collection and transportation	Refuse trucks	54	14	0	40
	Trailers	54	27	0	27
	Tractors	4	0	0	4
	Radio call system	1	0	0	1
Final disposal and wastes reduction	Tipper trucks	2	0	0	2
	Bulldozers	2	0	0	2
	4WD pick-up vehicle	1	0	0	1
Main roads/streets cleansing	Road sweeper machines	4	0	0	4
	Grass cutting machines	27	0	0	27
	Open drains cleaning machines	27	0	0	27
	Tree cutting saw/pruning tools	27	0	0	27
	Sets of cleansing tools	27	0	0	27

Source: Field work, 2008

4.4.8 Emergency of Grassroots Institutions in Solid Waste Management

The study established that the traditional organisational structure for KMC virtually excludes NGOs, CBOs and other grassroots institutions. This observation was applied to both to solid waste management services and other services provisioning such as water supply, sanitation, liquid water management, and so on. This reality was substantiated in Figure 4.7.

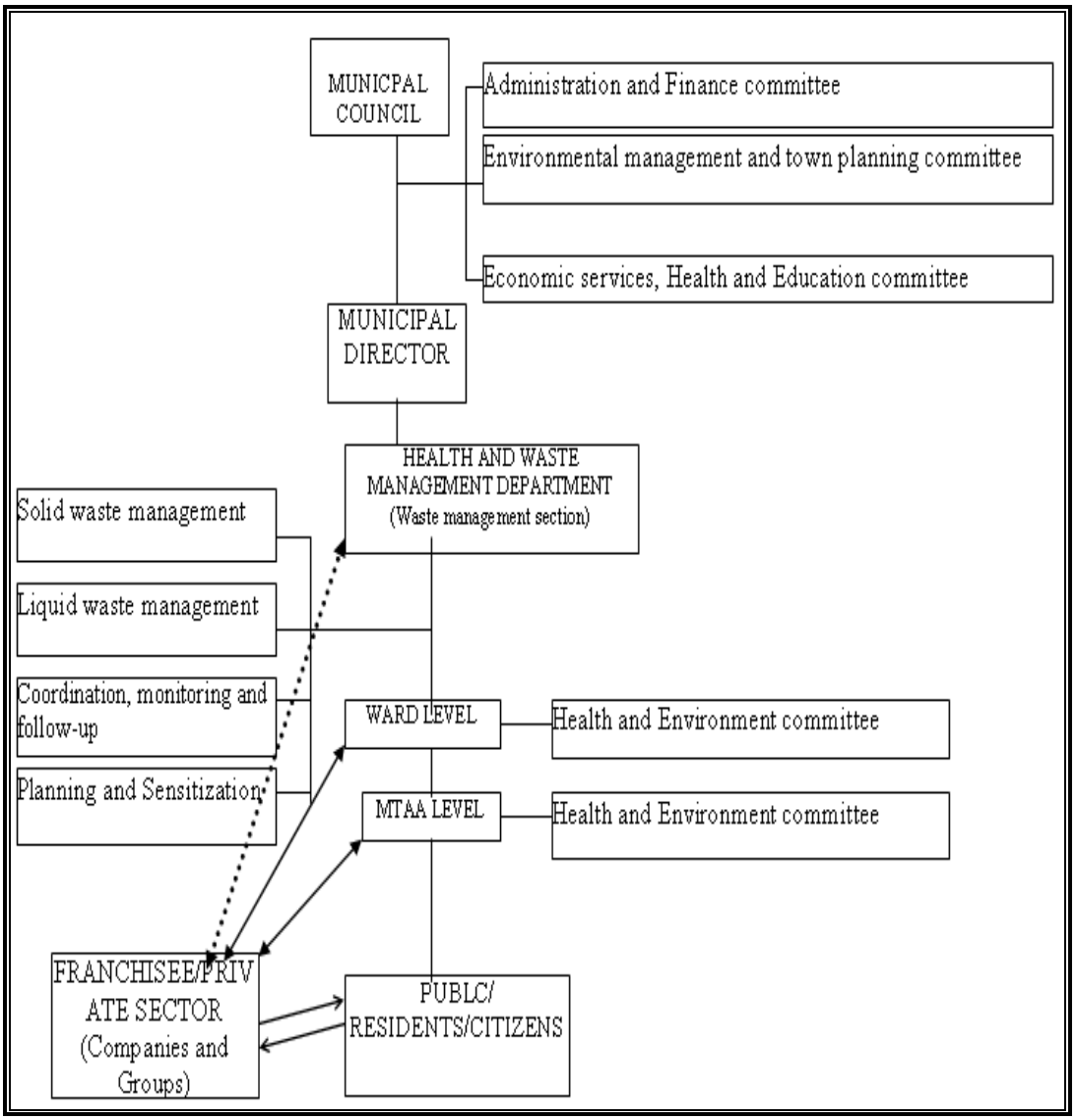


Figure 4.7: Kinondoni Municipal Council Waste Management Structure

Source: KMC, 2008

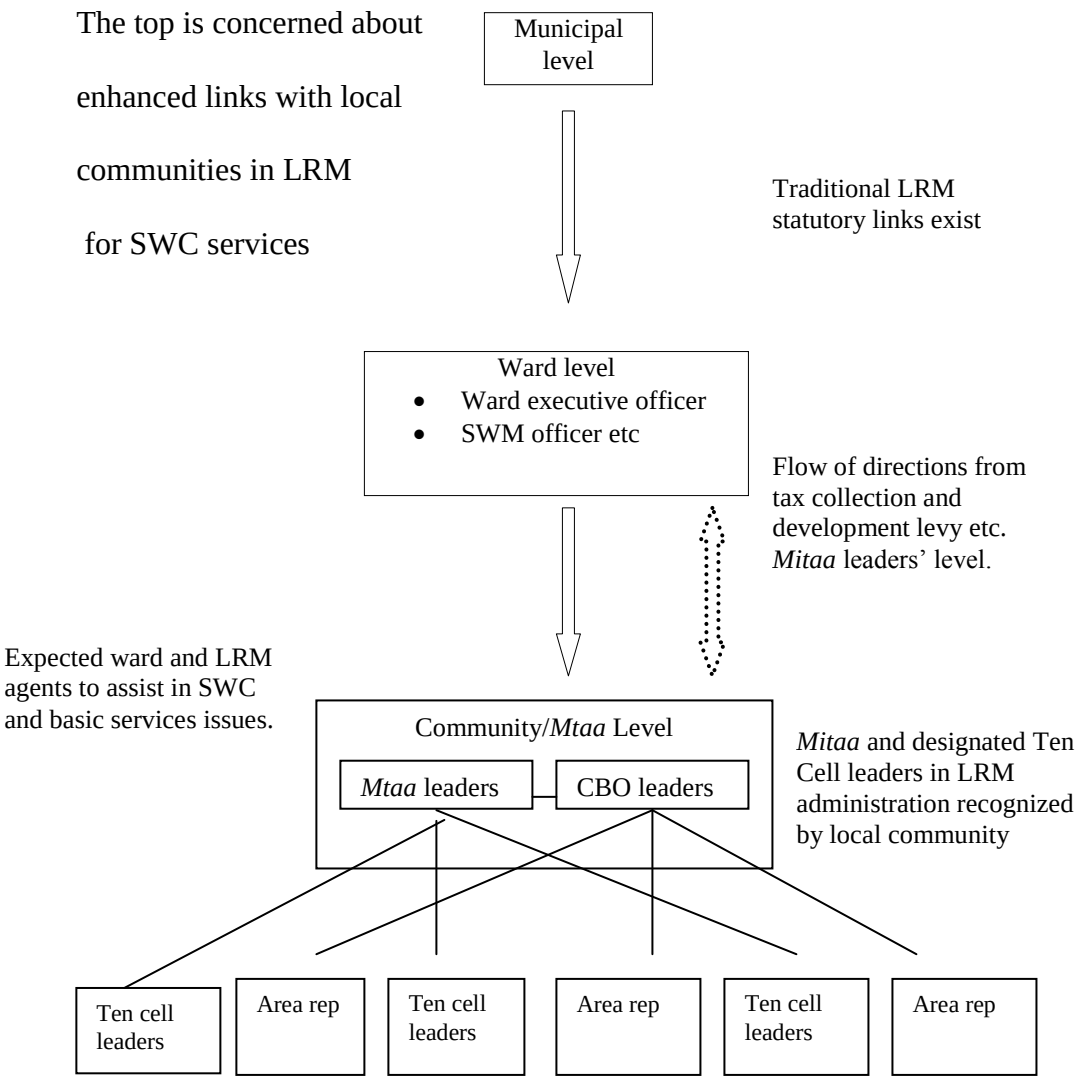
However, literature reviewed indicated that NGOs and CBOs are small-scale settings for meaningful political participation that can contribute to the cumulative processes of decision making at grass root levels. It was further suggested that, grass root institutions, such as NGOs and CBO, can build independent organizations in a way that can help pluralize the institutional landscape and strengthen societies. Moreover,

it was insisted that such grass root institutions can reinforce popular demands and empower community members to assemble to take collective development actions (Dimond, 1988; Bretton, 1990; Semboja and Therkilden, 1995; Kyessi, 2002).

This line of thinking was supported by empirical evidence from KMC where a number of grass root institutions, such as NGOs and CBO, were already making a valuable contribution in SWM by filling the gaps left by the municipality. Such grass root institutions included KIWODET, Informal Youth Groups, Lyhene Sanitary and Waste wise Solution (Po), Kawe Environmental Group (Po), and Mkunguni Group "2003"(Po).

Thus, what was needed was an approach acknowledging the substantial role of the grassroots actors (At the Designated Ten Cells Level) which are playing at the lowest level in the informal settlements in community socio-economic development. Indeed, it was logical to conclude that, formal and informal institutional or organizational linkages carry heavy weight as it is the first and foremost in stimulating mutual and moral supportive mechanisms in order to tap the resources from both institutions for the purpose of sustainable local community socio-economic development.

However, from the literature review it was found that, Kyessi (2002) had already proposed the administrative linkages between municipal and lowest community levels for smooth local resources mobilization towards sustainable SWM in urban areas as portrayed in Figure 4.8.



Key:

⇨ Directives and minimum interaction

rep. = Elected housing cluster representative

⇳ Informal interaction

___ Strong interaction at the horizontal level

Figure 4.8: Administrative Links Between Municipal and Lowest Community Levels

Source: Adopted from Kyessi, 2002:36

4.4.9 Does the Kinondoni legal Framework Guide Local Resources Mobilization?

The study established that, SWM in Kinondoni Municipality was guided by the Kinondoni Municipal Commission By-Laws of 2000 (Waste Management and Refuse Collection Fees). The by-laws prescribe the obligations of the residents as beneficiaries, service providers as private firms and authority as Municipal Council for managing solid wastes. The beneficiaries provide and maintain receptacles for domestic refuse to the satisfaction of the Municipal Council. They collect refuse from premises in receptacle placed strategically or as directed by the council and pay refuse collection charges (RCC) as directed from time to time by the council (Kinondoni Municipal By-Laws, 2000).

The franchise system had been adopted by the Kinondoni Municipality, where private contractors, community based organizations (CBOs) and non-governmental organizations (NGOs) had entered into contractual agreements with the authority in solid waste management. Contractors had been mandated to collect user fees from all persons who receive SWM services. The fees are different from place to place depending on the income level of the community. For example, fees for Oyseterbay, Mikocheni and Sinza are different. These rates are negotiated in community meetings. Generally speaking, the communities in KMC are receptive to the principle of pay as you pollute. This meant that, the service providers are exclusively responsible for management of solid wastes within their area of jurisdiction, and they pay a dumping fee of TZS 1500= per trip per tone as set out by the authority *(ibid).*

All franchisees are mandated by the Kinondoni Municipal Council to collect RCC from residents, and take legal action against residents who refuse to pay collection

fees. However the prosecution role given to them was perceived as an obstacle to their performance, since this activity would not dedicate their time for service provision and prosecution of resident. In turn, service delivery was done mostly in high and middle income residential areas with good payments records. This left poor areas to be served by informal waste collectors. Although informal waste collectors provide service at a relatively cheaper price, they dispose waste illegally at open spaces, in drains and there was no control of where they dump the wastes. On the other hand, the Municipal Council was responsible for coordinating waste collection and disposal arrangements and had the mandate to take legal action against by-laws defaulters.

There were many legislations concerning solid waste management at that time in Kinondoni Municipality to discipline and enforce the public behaviour regarding solid waste management, although there was some pieces which were already outdated and inappropriate for the actual conditions for the municipality life. The existed legislations were enforced by the Municipality Environmental Health Officer (MEHO) assisted by health assistants and municipal lawyers, apart from other staff members under the MSWM department.

However, the continuing poor SWM had caused environmental degradation in many parts of the urban areas. Thus, imposing a fine on somebody living in an area not serviced by collection service for throwing garbage's in open public places was almost absurd. As a result, solid wastes were indiscriminately disposed of in open spaces as well as in water draining channels on the seashore and in vacant public and

private plots and after all were very few people who were fined. Consequently, those who were fined but did not comply, were to be taken to court, but the court procedures were very bureaucratic and lengthy and decision in the case could take more than one year. This was a very bad picture, but not only from the environment point of view, but also from psychological side because, when laws are disobeyed and nothing happens the government plus relevant institutions are deeply eroded. In trying to curve the above challenges Environmental Management Act (Implementation SWM Regulations) was enacted in 2009 and came into force in the same year. In this Act there has been an improvement in administration and institutional arrangements plus duties of LGAs in relation to solid waste disposal.

The proposed punishment was that for the defaulters or anybody caught polluting the City would had to pay a fine amounting to TZS 50.000/= (US$ 42) or be jailed for three years. Under this pilot project Dar es Salaam City residents and all authorities were urged to take measures in preserving the City to enable it attract more tourists as one of the local resources mobilization. Actually, the overall solid waste management was still chaotic in many streets of Kinondoni Municipality, and service provision was poor because of low capacity of Kinondoni Municipal Council plus the contracted private companies.

It was further revealed that, under the guidance of the same legislation efforts had been employed by Kinondoni Municipality for suitable SWM but in vain as follows: allowance of public-private partnership through private contractors; encouragement of community participation in SWM through CBOs/NGOs such as Kisutu Women

Development Trust (KIWODET) in Hanna Nassif Ward; encouragement of refuse recycling ventures in KMC (by then about 26 undertaking such activities).

Others included establishment of official dumpsites for sanitary refuse disposal sites which was yet another strategy and had already been adopted; introduction of public health education on health rules and regulations, through many forms of media, and there was already some improvements on proper refuse storage disposal and concepts of privatization, for example, paying refuse collection fees from services rendered by contractors and the local government authorities; formulation of solid wastes collection emergency section in all Dar es Salaam City Municipals within their SWM departments to ensure services in case of areas where there was no contractors or where contractors who might want to terminate contracts; and new initiatives of some non-governmental organizations as a model in local resources mobilization towards sustainable solid waste management. Better Life Tanzania, a non-governmental organization in April 2009 launched a two year environmental cleanliness pilot project in order to supplement efforts done by other actors in order to reduce haphazardly and rampantly throwing of wastes in three municipalities.

Finally, it was revealed that apart from all efforts employed by Kinondoni Municipality to alleviate SWM problems, there was still a very limited scale of mass education due to human and material resource constraints. In short, the overall situation of SWM was still chaotic in many streets of Kinondoni Municipality, and service provision was poor because of low capacity of Kinondoni Municipal Council plus all other actors.

4.5 Key Actors Involved in Solid Waste Management in Kinondoni

This study established a number of issues about key actors in Kinondoni Municipality. These issues are summarised.

4.5.1 Intra-Organizational Arrangements for SWM System in Kinondoni

The study revealed that SWM was largely managed by Kinondoni Municipality and narrowly influenced by other actors' through the performance of various functions as indicated in Table 4.6:

Table 4.6: Stakeholders Involved in SWM in Kinondoni Municipality

Stakeholders	Functions, Responsibility and Roles
City Council	Formulating and supervising city policies, regulations and strategies; supervision of private firms; secondary waste collection in public and institutional area.
Municipal Council	Formulating and supervising municipal policies, regulations and strategies; supervision of private firms; secondary waste collection in public and institutional area.
Private Firms(see Appendix 1.2)	Collecting and disposing waste; charging fee;
Informal Collectors (informal CBOs/NGOs, individual youths &scavengers)	Collecting and disposing waste; charging fee;
Central Government	Formulating national policies, laws, regulations and strategies
NEMC	Implementing national policies, laws, regulations and strategies
Development Partners	Providing technical and financial support to national policies, laws, regulations and strategies

Source: Kinondoni Municipality, 2007

From Table 4.6, it was evident that integrated or multiple stakeholders participation in local resources mobilization towards sustainable SWM in Kinondoni Municipal was still lacking. This was because, the involved actors in SWM in the study area only ranging from the City Council as a coordinator, the municipality as a manager, contactors and rest of the CBOs/NGOs and individual scavengers as solid waste collectors. The integrated or multiple stakeholders participation could include all central government agencies or ministries such as Ministry of Land, Housing, and Human Settlement Development; Communication; Infrastructure Development etc.

Also, local development partners, private engineers, environmentalists, lawyers to mention few should not left out and so on. However, it was revealed that some of these functions are just on papers. Practically, for example, promotion, facilitation and supervision of contractors were still weak. There was no proper schedule for daily routine supervision due to inadequate staffs plus transport facilities and laxity. Also, there was lack of enforcement of waste management legislation and by laws and collection of appropriate waste management charges. Finally, local community mobilization towards proper SWM almost did not exist. Furthermore, Table 4.7 provides detailed elaborations on the functions of different actors in SWM in Kinondoni Municipal Council.

Generally speaking, it was evident that intra-organization arrangement for local resources mobilization towards sustainable SWM was still weak. For example, to perceive informal solid waste collectors as illegal operators while their role was very important for the same activity was very unfair. From Table 4.8 summarises the situation.

Table 4.7: Functions of Different Actors in SWM in Kinondoni Municipality

Institution	Department	Responsibilities
City Council	Waste Management	• Coordination of cross-cutting issues in waste management activities provided by the three municipalities • Advise City Council and Municipalities, on legal, financial, environment, landfill and disposal on matters concerning city waste management • Liaison with various waste management agencies and undertake research on waste management. • Collection of solid waste from main roads, open spaces, government institutions such as hospitals, state house, schools etc.
Municipal Council	Waste Department	• Collection, transportation and disposal of solid waste • Street sweeping • Promote, facilitate and supervise the privatization of solid waste collection services • Enforcement of waste management legislation and by laws • Collection of appropriate waste management charges
WDC	Ward Executive Officers	• Mobilize and coordinate the community towards proper waste management operations • Ensure that waste collection charges are efficiently collected in the ward • Enforce the relevant waste management legislation and by laws.
Mtaa	Mtaa Executive Officer	• Enforce the relevant waste management legislation and by laws.

Source: Kinondoni Municipality, 2007

Table 4.8: Comparison of CBOs and Informal Collectors in Kinondoni

Criterion	CBO/Private Collectors	Informal Collectors
Relationship to local government	Contractual (legally binding)	No formal relationship; perceived by Kinondoni Municipality as illegal.
Ownership	CBO: Community Private: Limited ownership	Mostly, single owner
Organizational structure	CBO: Single stage hierarchy management/members Private: Management/employees	Owner operated
Structure of solid waste management system	Not applicable	Not applicable
Collection schedule	Rigid, cost conscious,	Flexible to suit customer's convenience
Fee structure	Based on municipal rates, charged monthly	Charged per collection, fee negotiable, accepts alternative payment arrangements (barter, credit, micro-payment etc.)
Secondary collection	Bound to provide secondary collection services	No secondary collection; illegal dumping.
Recruitment of clients	CBO's and private constrained by lack of legal provision	Based upon social relations
Equipment	Primary collection: bicycles, pushcarts and trolleys; secondary collection: hired trucks	Primary collection: bicycles, pushcarts and trolleys. No secondary collection
Capital	Small capital resources	Micro capital resources
Expenses	Includes secondary collection costs, operating costs, taxes etc.	Avoid extra costs because of illegal status.

Source: Kinondoni Municipality, 2007

Furthermore, it was revealed that only nine Wards were run by qualified waste management officers in the study area. From this fact, however, it was clear that these roles at the Ward levels were just on papers. It was further revealed that even those Wards with such officers their performance in local resources mobilization towards sustainable SWM was very weak. Table 4.9 elaborates the said roles of waste management at the Ward levels in Kinondoni Municipality.

Table 4.9: Roles of Waste Management Department: At Ward Levels

S/N	Section	Roles
1.	Ward Executive Office	• Mobilize and coordinate the community towards proper waste management operations • Ensure that refuse collection charges are efficiently collected in the ward • Enforce the relevant waste management legislation's and by-laws • Coordinate with Health Personnel at ward/street level on health related matter.
2.	Ward Health Officers	• Supervision of health matters in the ward • Reports weekly or sometimes daily to the WEOs actions to be employed in case any unethical health cases
3.	*Mitaa*/Hamlets Leaders	• They attend health problems as directed by WEOs

Source: Ward Executive Officers, 2008

4.5.2 Performance of Informal Actors in Solid Waste Management

The study established that, the shortage of SWM equipments in Kinondoni Municipality and in the whole City has turned into a fortune to many unemployed youths who were informally collecting wastes from residential areas and in some business premises which were not easily attended by contractors. This was done by

youths relatively at a meagre fee ranging from TZS 600/= (0.5 US$) up to TZS 1000/= (0.98 US$) per trip by using simple local pull/push carts. These wastes were then dumped at the relevant nearby designated waste collection points.

One of the Kinondoni Municipality officials admitted that the management was all aware about the SWM activities done by the youths in the informal and sometimes formal settlements, but it did not cost the authority any money to pay them. Instead, depending on informal arrangements the youths could pay around TZS 5000/= (4.2=US$) as a retaining fee to the waste collection point caretaker for the site management purpose. The author further learnt that these youths were able to earn income ranging between TZS 6000/= (4.8=US$) up to TZS 10,000/= (9.2= US$) per day.

The overall observations and discussions with these self-employed youths in Kinondoni Municipality revealed about 12 up to 15 youths were working in the temporary or informal dumpsite per day. These youths went on to inform the researcher that they normally took solid wastes sorting and sold them to the owners of crush factories. Meanwhile the glass bottles for example, were washed and cleaned and sold to Kariakoo shopkeepers, who in turn were re-selling them at a profit. It was obvious that despite making money out of solid wastes sorting, most of these youths were exposed to several risks because they did not had any protective gear; sorting was done by using bare hands and worse they did not even wear gum boots to protect their feet (see Plate 4.3).

Plate 4.3: Youths Sorting Re-usable Items at Mwenge Trailer Collection Point

Source: Photo by author, 2008

The data below shows the contribution of scavenging activities in reducing solid wastes around streets over a period of five years, i.e. from 2004 to 2008; and the dominant items are scrap metal and plastic bottles.

Table 4.10: Scavengers Income Schedule per Weight and Pieces

Year	Weight in kgs	Picies	Income (in TZS in Millions)
2004	504,000	0	84.4
2005	738,000	216,000	148.6
2006	1,072,080	251,290	229.2
2007	1,934,200	493,130	430.8
2008	2,875,240	703,370	637.1
Total	7,123,520	1,663,790	1,530.1

Source: Fieldwork, 2008

4.5.3 Actors Involved in Solid Waste Sorting in Kinondoni

The study confirmed that, in Kinondoni Municipality, there were no solid wastes sorting at source at household's level in the area of study. Sorting was mainly done by scavengers who moved from one place to another, collecting re-usable items, which they sold directly or through middlemen to the public and to the industries that had to sprung up for industrial recycling of wastes. Recycling, and in this case scavenging, took place at five points: at generation; at collection during discharge; at storage; at illegal dumping sites; and at final disposal sites.

Plate 4.4: Packed plastic Bottles in sacks for Sale at Mzimuni in Kawe Ward

Source: Photo by author, 2008

Informal actors in Kinondoni Municipality played an important role in local resources mobilization towards sustainable SWM. Plate 4.4 above, and Plate 4.5 below, shows the role of scavengers in particular, youths and level of re-cycling in local resources mobilization towards sustainable SWM in the study area.

Plate 4.5: Scrap Metal Dealer Loading Materials for Sale to a Recycling Factory

Source: Photo by author, 2008

4.6 Constraints and Potentials Facing SWM in Kinondoni

A number of constraints and potentials face SWM in Kinondoni Municipality. Constraints manifest themselves both in terms of internal weaknesses and external challenges/threats. Similarly, opportunities manifest themselves both in terms of internal strengths and external opportunities. This section briefly discusses these dimensions.

4.6.1 Constraints Facing Solid Waste Management in the Study Area

(a) Rapid population growth and physical expansion

According to Mwaipopo (2005), the rapid growth rate of Kinondoni Municipality is about 4.2% annually and it becomes the 3rd fastest growing in Africa after Bamako in Mali and Lagos in Nigeria, and the 9th fastest growing in the world. Like in the case of many developing countries, this is due to its consequent attraction of rural migrants. Kombe (1994) noted that about 70% of the urban population in Tanzania was a product of rural urban migration without an exception of Kinondoni Municipality. It was estimated that about 80,000 people migrate to Kinondoni Municipality every year (Mwaipopo, 2005). The main reasons for migration would seem to be rural-urban wage discrepancy, job opportunities and better social and physical amenities in urban areas (Kironde, 1999). Table 4.11 below shows Kinondoni Municipality population density distribution and physical expansion.

Table 4.11: Population Density Distribution and Physical Expansion in Kinondoni

Zone	Population density	Wards
1.	More than 200 persons per hectare	Kinondoni, Hanna Nasif, Kijitonyama, Tandale, Manzese, Makurumla Mburahati, Ndugumbi
2.	100-200 persons per hectare	Makumbusho, Mwananyamala, Magomeni Mzimuni, Kigogo
3.	50-100 persons per hectare	Mikocheni, Msasani, Makaburini, Mabibo, Sinza
4.	Less than 50 persons per hectare	Ubungo, Kawe, Kimara, Goba, Mbweni, Bunju, Kibamba, Kunduchi,Mbezi

Source: KMC, 2008

In Kinondoni Municipality, plot subdivisions differed from place to place in both planned and unplanned settlements. For example, planned areas like Msasani and Mbezi, which were low-density areas range between 1200^2 and $2000m^2$. Plot sizes for areas like Sinza ranges between 400^2 and $800m^2$. In areas like Manzese Ward, Hannanasif, Mlalakuwa, Kawe, Mzizima, Tegeta centre area, Kimara, Kigogo, Magomeni etc. plot sizes were not more than $200m^2$. These areas lack basic services and public utilities including piped water, access roads, storm water drainage channels and SWM services; however poor land survey results into insufficient surveyed plots for housing development (KMC, 2009). Moreover, due to poor accessibility in almost all informal settlements SWM was seriously still lacking.

(b) Weak coordination among solid waste management institutions

There was a weak coordination among solid waste management institutions in the area of study. Because, the multiple-stakeholders approach this is so central to social and economic development and for that matter to the integration of sustainable socio-economic development was still lacking. Normally it requires appropriate coordination, cooperation and political willingness among all relevant organs of the governments (central and local governments) and the society in general. It is necessary to recognize the existing institutional arrangements and consider ways and means by which coordination and cooperation between institutionally distinct bodies with over lapping mandates might be enhanced and their purpose and functions constructively arranged. At the same time a dedicated and strong political willingness is inevitable, and solid waste management must be treated as a cross-cutting issue among our responsible institutions and communities at large.

Many philosophers argue that a successful execution of any development policy depends on the existence of a conducive institutional and legal frame work for its implementation and availability of adequate resources and coordination of all actors and stakeholders involved and interested in socio-economic community development (Kessy, 2005:77). In addition, there is also lack of clear connectedness and networks between communities' local organizations, actors and the communities themselves. The nature of relationships between these three domains is the vital aspect of social capital. There are many different types of connection between groups or institutions, such as trading of goods, exchange of information, mutual help, and provision of loans, communal celebrations including prayers, marriages and funerals. These might be long established and so not responsive to current conditions, or subject to regular update (Pretty and Ward, 2001:172-5; Kessy, 2005:74).

Connectedness, therefore, is manifested in different groups at the local level from guilds and mutual aid societies, to sport clubs and credit groups, to forest, fishery or pest management groups and to literary societies and mother and toddler groups. High social capital implies likelihood of multiple memberships of organizations and links between these groups. It is possible to imagine a context with large numbers of organizations, but each protecting its own interests with little cross contact (*ibid*).

(c) Inadequacy of capacity building in solid waste management

There are varying perceptions on the meaning of capacity building. In the narrowest sense capacity building includes training of human resources while in the broader

perspective entails institutional development and the society as a whole (TANGO, 2005). Capacity in this case, must suffice the ability to achieve performance in solid waste management, through better production of outputs and outcomes and hence high quality of living environment. All in all, capacity building as such seeks to improve the performance of all elements that forms CBO's/NGO's and the entire whole community members. Capacity building, therefore, for local resources mobilization for sustainable SWM must be systematically wider, and involve community planned and concerted efforts to achieve both CBO's/NGO's performance through purposeful reflection and enrich all community members (*ibid*).

In particular capacity building is inadequate in local resources mobilization for SWM in terms of knowledge, skills, resources, commitments and social corporate responsibility. Communities like those of Sinza, Kawe, and Hanna -Nassif Wards you may find that they lack mission and vision pertaining to sustainable local resources mobilization for sustainable SWM. At policy level adequate capacity building must involve improvement of the rules of governance along with regulations and practices that foster development of community members, all relevant institutions and the environment in which these institutions operate.

In this regard therefore, capacity building represents a broader perspective to include the creation of a conducive internal and external environment within which communities operate and function; and which represent human resources training and development, particularly only for CBO's/NGO's team management and leadership.

(d) Poor community participation in solid waste management

Community participation according to UNCHS (1996) means the voluntary and democratic involvement of a certain community (people) in contributing to the execution of a project, then enjoying the benefits derived there from common decision-making, particularly in respect with setting and formulation of objectives and goals and preparation of the implementation plan. Participation, therefore, is seen as an indispensable attribute in resolving community felt needs, and achieving the stated objectives and goals. This is particularly practical, because under normal circumstances the public sector does not have enough or sufficient resources of whatsoever. Consequently, in order to enhance the project ownership, beneficiaries' participation is necessary. However, at a larger existent Kinondoni Municipality was still condoning conventional approach in local resources mobilization towards sustainable solid waste solid waste management.

Effective and efficient community participation, which was still lacking in KMC in local resources mobilization towards sustainable SWM, was, therefore, a prerequisite for socio-community economic development in the area of study. Thus, local community participation may involve contribution of labour, money or material things in order to operate and maintain the project. It also involves contribution of ideas and sharing responsibilities in local resources mobilization towards sustainable SWM. Community participation in this context is seen as both a voluntary and democratic right of any community member.

In order to promote community participation for local resources mobilization towards sustainable SWM in Kinondoni Municipality, the researcher suggested the

proper use of community mobilization techniques. Community mobilization techniques are the skills used to stimulate people and let them get engaged into a public or community activity. In this context therefore, politicians in particular, at all levels are urged to assist in instilling the culture of dislike of filth and throwing away solid wastes indiscriminately, into local communities' minds. We need immediate change in our local communities' mind sets towards sustainable environmental cleanliness. It is obvious that it is wrong to assume sweepingly that people may change and hate filth before enhancement of their psychological state and behaviours towards local resources mobilization for sustainable SWM.

(e) Inequality and increasing poverty among the residents

To a greater extent, the increasing number of residents particularly in informal settlements which was due to the pressure arising from rural urban migration of unskilled labour and also low speed in growth of job opportunities, had contributed a lot to the increase of the rate of inequality and poverty among residents in Kinondoni Municipality. Generally in Dar es Salaam City, in 1991 the rate of inequality stood at 0.30; in 2001 stood at 0.36; but in 2007 stood at 0.34 (URT, 2006/7).

Major determinants of inequality in this municipal basically were in four categories, i.e. differences in wealth due to big income gaps, differences in attitudes and ability, differences in household composition, and discrimination and less government support particularly in the area of municipal service delivery. One of the principles of measuring inequality states that "if ones income distribution is achieved from

another by constructing a sequence of regressive transfers, then the former distribution must be deemed more unequal than the latter" because under this system incomes are transferred from the poor to the richer individuals instead of being vice versa (Kyessi, 2002).

(f) Inadequate solid waste re-cycling activities

There were also some constrains in solid waste recycling activities in the area of study. Under normal circumstances, recycling provide benefits for the original owner or dealer of the solid wastes as well as all people performing various steps from retrieval, recovery to re-use in order to compensate them for their time and efforts. In order to achieve this objective the government, municipalities or private sectors was to create incentives of the owners or dealers and all other people participating in the recycling trends and processes. There was a tendency that as the income of the community raises it becomes difficult to convince the people to deal with recycling activities unless the government or municipals have strict by laws concerning recycling goals.

However, informants from 16 interviewed factories reported that sorting at source at the original generations of solid wastes in Kinondoni Municipality was not done properly in order to make the dealer decide to choose disposal over storages, and there was wrong traditional attitudes towards scavengers as the public did not perceive solid waste as economic materials. More constrains are summarized under Table 4.12.

Table 4.12: List of Major Constraints Facing Re-Cycling Activities in Kinondoni

Serial No	Major constraints	Responses
1.	Electric power from TANESCO is of a lower voltage than required by the machines	50%
2.	Tax rate is high; needs to be reduced in order to encourage higher production	26%
3.	Workers strikes affects production, leading to low quality and quantity of goods	17%
4.	Tanzania's available enabling infrastructure do not favour industrial production	17%
5.	Government policy on the scraps collection is contradictory	73%
6.	There is shortage of iron sheets in the market, and we are planning to export them	47%
7.	Poor infrastructures in the industrial sector	19%
8.	Generation of the type of waste needed is becoming less; only assorted materials and Kart are available	14%
9.	The products made out of available kart has less market in Tanzania so we plan to export to Zambia	9%
10.	There is a small market for steel products: i.e. iron bars, iron sheets - looking for markets outside	7%
11.	Workers strikes decreases the morale of re-cycling activities	3%
12.	Competition from other factories is stiff	
13.	Failure to process unfinished goods to finished goods so that we have value-added	1%
14.	Change of technology necessitates also changing the machines	3%
15.	The materials collected by scavengers is not enough causing shortages of materials	9%

Source: Field data, 2008/09

4.6.2 Challenges Facing solid Waste Management in the Study Area

(a) Negative cleanliness habit

Local resources mobilization towards sustainable solid waste management cannot succeed if solid waste producers are not sensitized on the question of cleanliness; thus, it had to be inculcated in people's mindset otherwise the whole exercise would become fruitless. The study urged the community to be sensitized in order to realize

that SWM was everybody's duty and not the duty of some other organ (e.g. local authorities). In this regard therefore, the inherent attitude that local governments should take care of the environment was to be changed; communities would achieve this through self-help/self-reliance.

(b) Increased plastic wrappings

The researcher observed that the increased use of plastic wrapping bags in the shops; markets and supermarkets pose a big problem in SWM since these plastics do not undergo decomposition.

(c) Lack of appropriate information and data base

A lot of information about SWM was still scattered apart from lack of a central database. If such information and data was properly maintained and managed, they would be useful in planning for solid waste management systems. Data showing how many people, households, shops, hotels, markets, public institutions, waste generated, and income tax, prevalent diseases (endemic and epidemic) should be available for each hamlet (*mtaa*). Lack of such data was misleading the allocation of the meagre resources available.

(d) Existence of gender roles

Genuine development is achieved by each person being given same opportunity and being treated fairly, age, creed, religion and justly regardless of sex and socio-economic status (UNDP, 2002; TANGO, 2005). As it is the case in many developing countries including Tanzania, women are disadvantaged by traditions, laws and policies. Their access to employment and business opportunities, living conditions, involvement in development programmes, time control, and human and material

resources are limited for them, without an exception of Kinondoni Municipality. Thus, the issue here of gender dimension in SWM was also very important. The researcher emphasized that those problems of SWM cut across the whole society regardless gender; therefore, involving everybody in planning for SWM from the point of generation to disposal was recommended. The case of KIWODET in Kinondoni Municipality was a good example.

(e) Low level of political willingness

Since many decisions are endorsed by politicians, it was important that the politicians were sensitized on SWM so that they could understand their role in matters of the environment and public health. A local government leader should, among other things, be chosen on the merit of his ability to facilitate SWM in his/her area. The case of Sinza Ward where almost all local government leaders, the Ward Councillor, and Member of the Parliament gave assistance to solid waste management was to be emulated.

(f) Partial involvement of private operators in solid waste management

To improve efficiency, effectiveness and accountability, the private sector should be involved as sole agents through clear contracts with municipalities. In that respect the Municipal Authorities should in turn only assume a supervisory role (act as a watchdog and client) that should represent the people. The contractor either, should be allowed to collect revenue and be paid a reasonable commission that is administration costs plus profits by the Municipal Authorities.

(g) Lack of comprehensive & sustainable solid waste management programmes

This study underscored the importance of proper use of resources allocated to

SWM to be directly managed by SWM departments. In order to have a sustainable SWM programmes, the money generated from the services should be managed by the environmental department itself.

(h) Factual environmental degradation caused by resources deficits

A cross examination of the whole Dar es Salaam City during rapid settlement appraisal, however, with much attention to Kinondoni Municipality it was revealed that waste collection was relatively effective in some urban Wards like Sinza, Kijitonyama, part of Makumbusho and Mikocheni, part of Kawe particularly in Makongo Juu and part of Msasani particularly in Oyster Bay and Masaki. These are settlements which were relatively inhabited by relatively high income earners. In these areas contractors were assured of being paid service charges because of people's awareness of the health hazards likely to be caused by a dirty environment.

Plate 4.6: Crude Solid Waste at One of the Informal Dumpsite in Tandale

Source: Photo by author, 2008

It was also revealed that solid wastes are dumped directly into rivers particularly during the night and consequently pollutes water that is used for horticulture and domestic purposes. This was noted along Nalung'ombe River in Tandale Ward, as seen in Plate 4.7.

Plate 4.7: Solid waste Dumped in Nalung'ombe River in Tandale Ward
Source: Photo by author, 2008

Further, investigation revealed that in Kinondoni Municipality informal/temporary dumpsites still exist. One of the informal dumpsite caretakers (names withheld) informed the author that there were informal arrangements where KMH and WMD had allowed informal/temporary dumping of waste in those areas. These types of informal dumpsites were noted in almost every Ward in Kinondoni Municipality as portrayed in the following plates.

However, apart from all these challenges, it was learnt that these informal dumpsites were a source of living for local communities as some people sort re-usable materials for sale, before these materials are collected and directly transported either by Pos or

the municipality to a dumpsite for further treatment.

Plate 4.8: People Busy Sorting Re-usable Materials at Kigogo Darajani

Source: Photo by author, 2008

4.6.3 Challenges encountered by individual scavengers

The informal collectors (scavengers) could have been doing better in reducing solid wastes around the streets if their activities were not hampered by the following major challenges:

i) Lack of protective gear to protect themselves from sharp materials, various communicable diseases and unpleasant smell.

ii) Fluctuation of demand of waste causing very low prices of some of the collected items.

iii) Weather conditions such as the hot sun and heavy rainfalls affect the scavenging business

iv) Illegal solid wastes dumping practices for example dumping in river valleys and grave yards create a sense of immorality and questionable

human behaviour.

4.6.4 Challenges Encountered by Middlemen in SWM

Middlemen have at least reported about five problems facing them while conducting their businesses, as follows:

i) Lack of enough capital to buy raw materials at times.
ii) Lack of a direct market since some of the buyers or recyclable dealers are still operating their businesses informally and sometimes in their back yards or closed areas.
iii) Absence of protective gear and as a result they get infected with long term coughing and other respiratory diseases, low security at the disposal sites.

In view of all this, the law of survival for the fittest or of the jungle was the order of the day.

4.6.5 Potentials of Better Solid Waste Management in Kinondoni

Despite the existence of ineffective and inefficient SWM in the area of study there were potentials of improvement. Specifically, the Kinondoni Municipality had put in place a special plan of action program which would address these constraints. This plan entails a number of priorities as summarized in Table 4.13.

Apart from these priorities, Kinondoni Municipality had adopted techniques (see Appendix 1.8) and streamlined roles of the actors to be involved (see Appendix 1.9). Furthermore, the study revealed that there was an envisaged programme in the area of study to install machines for recycling organic solid waste in big markets**.** It

was claimed that these machines would be efficient, and one machine could recycle about 10 to 15 tones of waste per hour. These machines would recycle organic wastes into other commercial products which would be used to produce other commodities. The remaining wastes could be used to produce biogas and fertilizers to be used by farmers. It was further revealed that apart from using bulk waste in agricultural activities, it may also be used to make a briquette which is a substitute of charcoal fuel and reduce deforestations and create employment to many youths. Generally, this move could minimize the cost of solid waste management in the study area especially in the big markets.

Table 4.13: Priorities Set by Kinondoni Municipality for Effective use of Available Technology and Solid Waste Management

	SWM Problems	Strategies
1.	• Poor waste disposal services (Absence of a proper disposal/final treatment facility, absence of proper equipment for final treatment operations)	• Construction of a Sanitary Landfill in Kisopwa and supply of necessary equipment for final disposal operations.
2.	• Increased fatalistic attitude of the public towards proper waste management • Population lacking information on waste management programmes • Weak private sector participation	• Promotion of more public cooperation through awareness creation programmes
3.	• Insufficient fleet of vehicles and other equipment for the provision of waste management services • Insufficient clear systems and technologies as applied for waste collection and transportation	• Supply of standard equipment/tools for streets/roads sweeping, refuse collection and transportation (trucks, sweeping machines etc) • Establishment of waste management information system (WMIS)
4.	• Insufficient technology for intermediate waste treatment and or recycling • Insufficient market for recyclables	• Organization of intermediate treatment and recycling activities programmes
5.	• Poor waste water management	• Construction and rehabilitation of storm water drainage • Rehabilitation and expansion of public sewerage system • Capacitating cesspit emptying services

Source: Field work, 2008

4.7 Summary and Conclusions

This chapter presented findings of studies, which were carried out in Kinondoni Municipality to assess pre-privatization of solid waste management and disposal. From these findings, it was the case that, due to rapid population growth, solid waste generation was inversely proportional to solid waste collection in 1993, where, about 10% out of 1480 tones of solid waste generated was collected. According to the theory of collective action, this observation was warranted since the large the group the lower the allocative efficiency of a collective action initiative. However, various fieldwork studies which were conducted after 1994 indicated that as a result of privatization of solid waste management activities in the study area, solid waste management had improved from at about 12% in 1994 in DCC to 40% out of 1500 tones of the total solid waste generated in the Kinondoni Municipality daily (KMC,2008).

Theoretically speaking, this improvement in SWM was attributed to local resources mobilization through private sector participation in solid waste management in the City. This was the case since; private sector participation entails delegation of powers to lower entities, where such delegation narrows the group enjoying the goods allocated through a collective action initiative. According to the collective action theory, the smaller the group the higher the allocative efficiency of a collective action initiative.

However, the studies consulted hitherto did not clearly tell the researcher specific operational and institutional arrangements which had been put in place since 1994 and that had warranted these improvements. For example, answers to the following

questions were not yet clear: *What is the impact of contracting-out companies as a strategy of LRM towards sustainable solid waste management? What is the impact of formal NGOs involvement in SWM as a strategy of LRM towards sustainable solid waste management? And, what is the impact of informal CBOs involvement in SWM as a strategy of LRM towards sustainable solid waste management?*

These and the previously stated research questions are answered case-wise in chapter five, six and seven respectively. And finally, chapter eight was a cross case analysis and synthesis that could allow this study to put together key emerging trends that would help the whole community in answering the above questions.

CHAPTER FIVE

5.0 LOCAL RESOURCES MOBILIZATION THROUGH PUBLIC- PRIVATE PARTNERSHIP: THE CASE OF KAWE WARD

5.1 Introduction

This chapter addresses the following issues: administrative profile of Kawe Ward; socio-economic and infrastructure profile of Kawe Ward; the influence of PPP in Kawe Ward; the privatization process and framework in Kawe Ward; benefits of PPP in Kawe Ward; LRM towards sustainable solid waste management in Kawe; challenges facing private operators in Kawe Ward; and the lessons learnt from Kawe Ward.

5.2 Profile of Kawe Ward

5.2.1 Location of Kawe Ward

Kawe Ward is located in the Northeast of the KMC headquarters, and bordered by Goba Ward to the North, Indian Ocean to the East and Kimara Ward to the West. In the South it is bordered by Mikocheni, Kijitonyama and Ubungo Wards. It constituted about 26,490 households and habited with a population of about 94,166 people (URT, 2002). In this regard, demographically Kawe Ward population growth was as indicated in the Table 5.1.

5.2.2 Kawe Ward administrative Set-up

Kawe Ward is divided into six administrative settlements (Ukwamani, Mlalakuwa, Mzimuni, Mbezi Juu, Makongo and Changanyikeni) as potrayed in Figure 5.2 below. The Ward administration was comprised of five departments including

Health, Education, Property Tax, Community Development, and Agriculture and Livestock Development as portrayed in Figure 5.1 below. Overall, permanent employees in Kawe were supposed to be nine, but during this study they were only eight, because of the absence of a Ward Waste Management Officer. There was also, a Ward Development Committee (WDC) which was the highest decision-making body in the Ward. Members of the committee included the Chairperson who was the Ward Councillor and who represented the Ward in KMC, Chairpersons of the settlements/mitaa areas (for urban authorities), Chairpersons of village councils within the Ward, invited persons from CBO's/NGO's, and other Civic Groups in the Ward involved with promotion of local development and member of the District Council who was a resident in that Ward.

Other members included Councillors of Urban Authorities resident in the Ward and Women Representatives in KMC. In any case, the Ward Executive Secretary (WEO) was the secretary to the Ward. The settlements/*mitaa* administrative units were co-coordinated by the WDC which linked them to the Council of elected Ward Councillors as well as the Member of Parliament for Kawe constituency which was under Kinondoni Municipality. Sections 14A (1) and (2) of the Local Government, Urban Authorities Act of 1982 gave the mandate to WDC governments to formulate and submit to the urban authority (in this case KMC), proposals for the making of by-laws related to the affairs of the Ward including SWM. It also, implemented directives of the Municipal Council including implementation of policies. WDC further drew powers and mandate to perform its roles from the Local Government (Urban Authorities Act of 1982) which among others establishes WDCs. However,

the administrative structure was similar across all the KMC Wards.

Table 5.1: Kawe Ward population Growth as at 2002 and Projections 2004/2010

Mitaa names	**2002**	**2004**	**2006**	**2008**	**2010**
Mzimuni	28,966	31,177	32,372	33,455	34,377
Ukwamani	14,775	15,883	16,449	16,956	17,377
Mbezi Juu	18,355	18,902	19,546	20,112	20,600
Makongo	8,453	9,345	9,701	10,037	10,326
Mlalakuwa	7,973	8,911	9,212	9,484	9,720
Changanyikeni	15,623	16,123	16,652	17,219	17,808
Totals	94,166	100,332	103,938	107,265	110,196

Source: URT, 2002, 2006, 2008

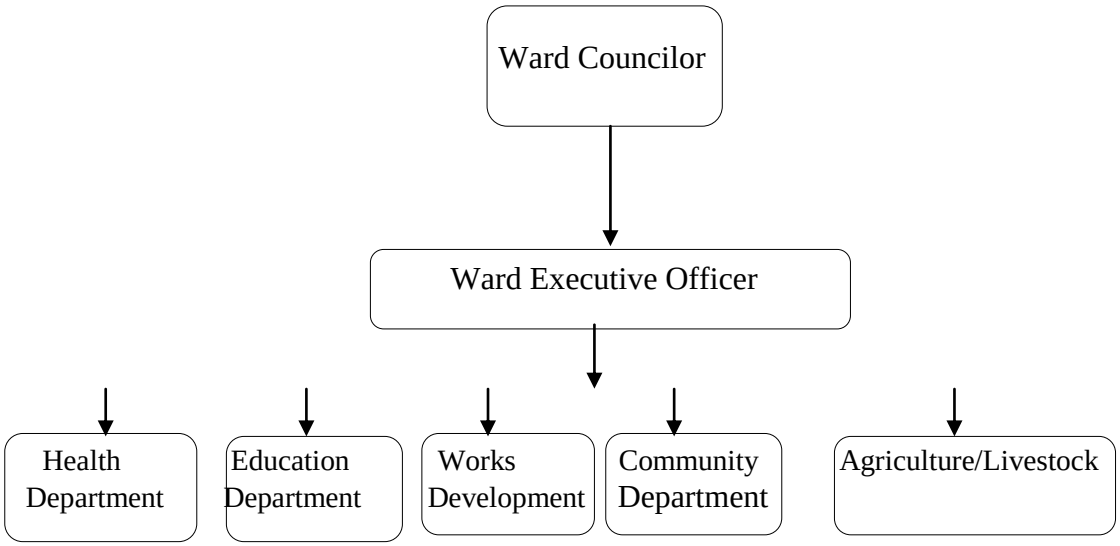


Figure 5.1: Administrative Structure of Kawe Ward

Source: Kawe Ward Office, 2008

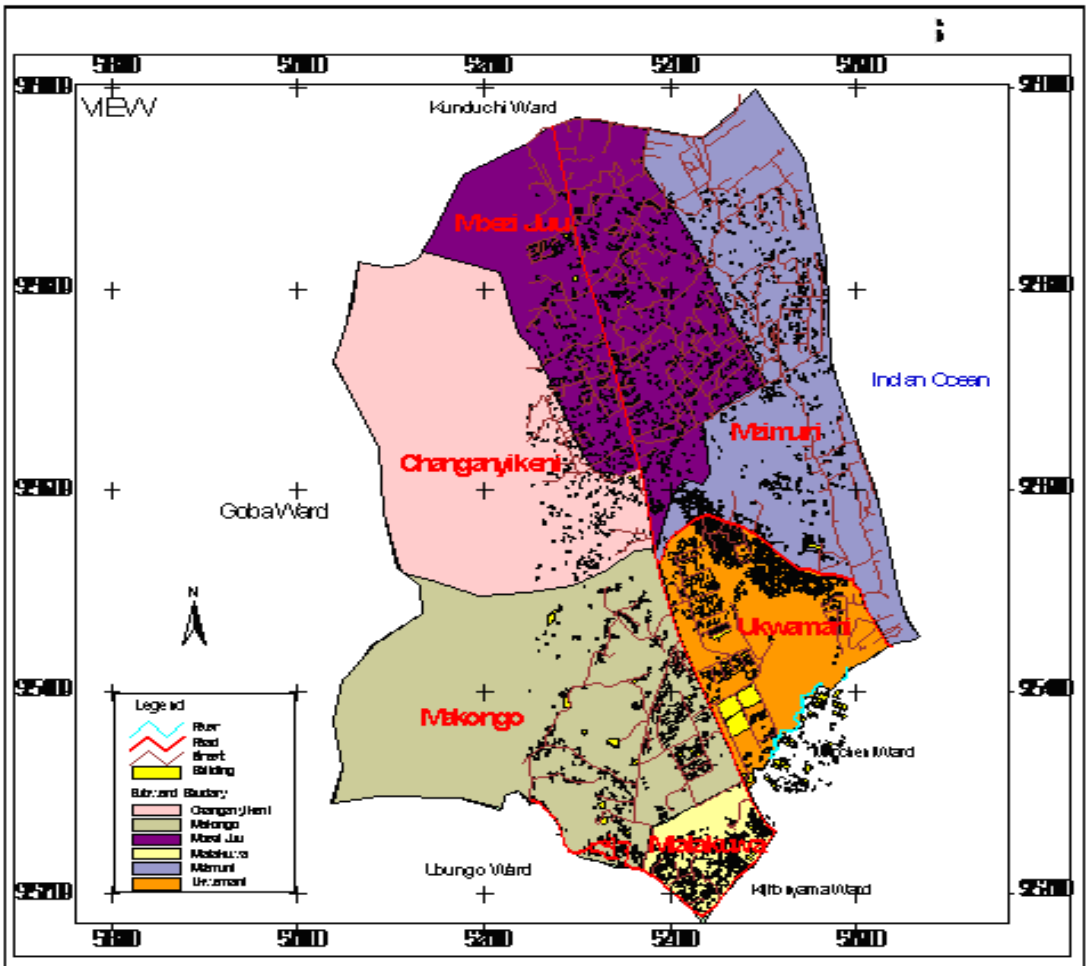


Figure 5.2: Kawe Ward Administrative Boundaries and Mitaa

Source: Kinondoni Municipality and field work, 2008

5.2.3 Socio-economic Profile of Kawe Ward

The majority of local communities in Kawe Ward had low incomes, with major activities of the households including street vendors who earned Tshs. 30,000/= per month (REPOA, 2003). These constituted about 38.4% private business income, 28.78% rental houses income; 28.7% self-employment; 27.10% *Mama/Baba Lishe* (informal restaurants); 19.8% civil servants; 19.4% small scale agriculture; 11.5% masonry; and fishing was about 4.7%. Generally, about 12.5% of the total local community members could not read or write while about 70% had primary

education, which resulted in poor level of income due to lack of formal knowledge and skills *(ibid*). The area was mostly unplanned with fewer planned settlements; and ethnically it was relatively heterogeneous with different ethnic groups mostly migrants from other regions.

5.2.4 Infrastructure profile of Kawe Ward

In regard of infrastructure conditions, the following facts were applied: many parts of the settlements had no clear roads (i.e. estimated at about 40%); no clear footpaths (i.e. estimated at about 54%); the drainage system was not well defined (i.e. estimated at about 60%); and big part of the settlements sanitation was characterized by liquid water and pit latrines (i.e. also estimated at about 57%). In order to mitigate the situation particularly in the informal settlements, Kinondoni Municipality had begun to allow private provision of municipal services, both to enhance efficiency and to ease the strain on authority finances. So, the following findings and discussions was to dwell on how public-private partnership (PPP) strived to contribute to LRM toward sustainable SWM in the study area.

5.3 Performance of Solid Waste Management Services in Kawe Ward

5.3.1 Solid Waste Generation and Collection Rates per Day

The ratio of waste collected versus waste generated is a good measure of the effectiveness of SWM services. If the ratio is 100% then we have the maximum possible effectiveness. As far as Kawe Ward was concerned, the field data collected during this study in 2008 showed that the collected solid wastes was about 54 tones (33.3%) out of 162 tones of solid waste generated per day. This meant that more than (66.7%) of the residents were not getting SWM services as required by the

equity principle.

5.3.2 Waste Recycling, Composting and Dumping ratios per Day

This study conducted a compliance audit with respect to the wastes hierarchy principle. According to this principle, in designing wastes management strategies, preference should be given to those methods which are more environmentally sound. The study was guided by the assumption that, the wastes hierarchy entails a five-step order of priority in which wastes prevention has the highest priority being followed by re-use, recycling, recovery and wastes disposal as the last option.

From a quantitative aspect, in order to make this compliance audit a success, compliance with the wastes hierarchy principle was checked through two ratios. These were the percentage of recycled wastes versus land-filled wastes and the percentage of composted wastes versus land-filled wastes.

The quantitative findings from the field were as follows: the total of recycled in terms of tones was about 2.6 (1.6%); and the amount of composted wastes was about 2.1 tones (1.3%) of land-filled wastes. Due to the demands of the wastes hierarchy principle, the bigger the ratios the more the principle is complied with. Thus, in this case it was revealed that the level of compliance with the wastes hierarchy principle was still negligible.

In regard to qualitative perspectives, compliance with the wastes hierarchy principle was checked by examination of the modes of payments which are made by various solid waste management service providers. For the waste hierarchy principle to be complied with there should be different price tags for biodegradable wastes, re-

usable wastes, recyclable wastes, and inert wastes respectively. But, if the contractors are paid per quantity of solid waste disposed off in bulk, regardless of the differences in these waste types, then, there could be no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment.

An examination of the contracts between Kinondoni Municipality Council and solid waste management service providers showed that the mode of payment to service providers was based on the quantity of solid waste disposed off in bulk, regardless of the differences in these waste types. Specifically, the contracts were pegged against the "Waste Management and Refuse Collection Fees" as amended by the Kinondoni Municipal Council in 2004. Thus, these refuse collection charge rates were contrary to the demands of the wastes hierarchy principle.

5.3.3 Residents' Satisfaction in Solid Waste Management Services

During this study a survey was conducted asking the 186 households if they are satisfied with the SWM service they received. In order to test this satisfaction the following question was posed: *If you receive SWM services what is your opinion of the service provided?* The possible alternative responses were: very satisfied; reasonably satisfying; needs improvement; don't know; and no service received. The findings on the degree of satisfaction from SWM services in Kawe Ward were as follows: 9 (5.2%) out of 186 households the answer was very satisfying; 66 (35.5%) out of 186 households the answer was reasonably satisfying; 45 (24%) out of 186 households the answer was needs improvement; about 4 (1.9%) out of 186 households the answer was don't know; and about 62 (33.4%) out of 186 households

the answer was no service received.

5.4 Actors involved in Local Resources Mobilization and Their Roles

The study revealed that by July 2008, there were 42 private operators (Pos) contracted by Kinondoni Municipal Council to manage solid wastes in the municipality. In this regard therefore, institutional actors and their roles are summarized in Table 5.2.

Table 5.2: Actors and Their Roles in LRM for SWM in Kawe Ward

Actor	Resources Inputs
Households Members	Collection Of Solid Wastes; Payment Of Fees; Waste Containers; Human Resources.
Informal Youth Groups	Local Pull/Push Carts; Labour; Transportation Of Wastes To Collection Points Or To Informal Primary Dumpsites.
Lyhene Sanitary And Waste Wise Solution (PO)	Human Resource For Collecting Solid Wastes In Mbezi Juu, Makongo, And Mlalakuwa Settlements And Transporting Them To The Official Dumpsites; And At The End Of The Month The Mobize/Collects Service Charges From Each Household.
Kawe Environmental Group (Po)	Human Resource For Collecting Solid Wastes In Ukwamani, Mzimuni, And Changanyikeni Settlements And Transporting Them To The Official Dumpsites. And At The End Of The Month The Mobize/Collects Service Charges From Each Household.
Mkunguni Group "2003"(Po)	Human Resource For Collecting Solid Wastes In Mlalakuwa Settlement And Transporting Them To The Official Dumpsites. And At The End Of The Month The Mobize/Collects Service Charges From Each Household.
Kmc	Supplies Tractors For Pulling Trailers From Mzimuni And Mlalakuwa Collection Points To Official Dumpsites
Mtaa Leaders	Coordinates Various Actors In Swm In A Way That Makes The Process Organised.

Source: Own construct, 2009

The actors involved in PPP engagement at Kawe Ward like in any other Wards in Kinondoni Municipal Council, operate in accordance with the "Public Procurement Act No.4 of 2001 revised in 2004", through open tendering.

5.5 Local Resources Mobilization Strategies

The study of LRM was guided by six variables, namely: institutional factors, organizational factors, spatial factors, financial factors, legal factors and technological factors. Against these variables, the findings on the existed local resource mobilisation strategies in Kawe Ward were presented below.

5.5.1 Institutional Factors

By July 2008, there were 42 private operators (Pos) contracted by Kinondoni Municipal Council to manage solid wastes in the municipality. They include: Lyhene Sanitary and Waste wise Solution, Kawe Environmental Group, Mkunguni Group "2003" and KMC. Apart from KMC and Lyhene Sanitary and Waste wise Solution, the rest of the actors were informal actors, meaning that they did not had formal registration. As such they lacked legal recognition by the government.

5.5.2 Organizational Factors

The study revealed that, formal community participation through grass root institutions for municipal SWM services did not exist in Kawe Ward, though at low level in order to enhance regular flow of linkages within that local community and other relevant partners. It was discovered that, leadership skills, management skills, ability to define and manage different roles and responsibilities, structure and

procedures, accountability and transparency in partnership agreements, appropriate empowerment, and conflict resolution skills were still very low.

5.5.3 Spatial Factors

The study revealed that, spatial factors in Kawe Ward were mostly characterized by unplanned settlements and dense population in the biggest part of it. More than 70% of housing in Kawe Ward comprised informal settlements, most of which were rapidly getting dense. As a result, there was an increasing blockage of access roads and paths. No land had been provided for temporary dumpsites; thus, solid wastes were indiscriminately dumped into streets/ paths. Due to lack of accessible roads big trucks could not get through to collect solid wastes instead a wide range of solid waste collection was serviced by push/pull carts.

5.5.4 Financial Factors

The study established that**,** since December 2004, SWM services in Kawe Ward particularly in Mlalakuwa settlements had been provided by Pos i.e. Mkunguni Group "2003" to during the study. Financially, Mkunguni Group "2003" charged TZS 1.500/= (equivalent to US$ 1.35) per month, per household instead of the municipal fixed rate of TZS 2000/= (equivalent to US$ 1.80) per month, per household. This figure had to be agreed upon after some negotiations between the *Mtaa* leaders and the Pos following the resident's request. For example, Mlalakuwa *Mtaa* leaders were supposed to ensure that Pos were rendering the services at the standard agreed and without any contractual default. In their routine task, the *Mtaa* leaders were obliged to sensitize local residents to keep their environment clean in order to avert epidemics.

On the other hand, *Mtaa* leaders met Pos particularly when they suspect that local residents were reluctant to pay service charges or any other dues. Similarly, in the year 2008, a SWM service in Mbezi Juu Mtaa was contracted to a private actor, one known as M/s Iyhane Sanitary and Waste-wise Solution Supplies. Contractually, the Po was supposed to provide SWM services, while households were responsible to pay TZS 2000/= (equivalent to US$ 1.80) per month for the services rendered. However, data availed from Kinondoni Municipality there were other revenue collection sources such as traders, institutions and informal sectors. Table 5.3 shows Kawe Ward revenue collection in fiscal year 2007/08 and 2008/09.

Table 5.3: Kawe Ward Revenue Report (2007/08 and 2008/09)

Revenue collection from SWM	2007/08(TZS in Millions)	2008/09 (in TZS in Millions)
Shops	19.5	12.2
Restaurants	5.6	3.4
Hotels	7.9	5.5
Other businesses	1.8	1.3
Households	32.7	34.7
Institutions	4.5	3.2
Informal sector	5.9	7.9
Total	77.9	68.2

Source: KMC, 2010

The Kinondoni Municipality informed the researcher that the reasons for the notable shortfalls include development of informal SWM sector, weak patriotism, growing number of defaulters, and poor enforcement of by-laws. Regarding resources such as supply of labour in SWM, youths render such services which supplement local residents' involvement or participation in the study area. Other resources like space

and modern equipment for effective and efficient SWM was still a challenge. During this study neither allocation nor physical financial resources had been put aside for SWM services in Kawe Ward in Kinondoni Municipality.

5.5.5 Legal Factors

The study showed that, the contracts issued to Pos also provided for them do and don'ts which the contractors were ought to observe. For instance, the contracts required Pos to collect, transport and dispose solid waste to approved sites; clean and remove sand from all streets within their areas of operation; clean open drains; remove dead animals from the relevant streets and roads; and to collect refuse collection charges as specified under the waste management and refuse collection by-law (2000). Under item one to nine of the terms and conditions of the contract (refer Appendix 4.1) among other things, the Pos were required to do the following:

i) Provide to Kinondoni Municipal Council a schedule of the time table for services provision.

ii) Collect refuse collection charges as specified under the waste management and refuse collection fees by-law 2000.

iii) Pay 5% of the collection fee to *Mtaa* leaders if they used such money to assist in the collection of refuse. The percentage was due only when the *Mtaa* leaders collect service charges from the residents and hand these over to the Pos.

iv) Properly discharge solid waste in officially designated disposal facilities during official hours of operations.

v) Pay dumping fees as directed by Kinondoni Municipal Council.

vi) Pos were not allowed to sub-let or purport to assign any part of the contract to any other person.

vii) Neither the Pos nor their servants could hold themselves as being the servants or agents of Kinondoni Municipal Council. Furthermore, the Pos were neither allowed to enter into any contract on behalf of Kinondoni Municipal Council, nor were they allowed to make, vary, discharge or waive any by-laws or regulation.

In addition to the above, items ten and eleven of the terms and conditions of the contract described situations where the contract given to a Po could be terminated. These included the following:

ii) Failure to collect solid wastes present in the contractor's area of operation;

iii) Presence of informal waste dumps or accumulations of waste in areas where solid waste collection should be provided by the contractor;

iv) Presence of litter or refuse in an area that should have been cleaned;

v) Presence of solid waste on the ground near a transfer station;

vi) Presence of any solid materials in a drain that should have been cleaned;

vii) Scattering or leakage of waste from any waste collection vehicle;

viii) Improper handling of hazardous waste; incorrect or inadequate record-keeping by the contractor; inadequate or inappropriate responses to viable complaints;

ix) Unsafe work practice and traffic violation;

x) Discharge/disposal of solid waste in an unauthorized area;

xi) Failure to perform a substantial part of the service for a period of one week;

xii) Inability of the contractor to satisfy customers;

xiii) Unreliable service frequency;

xiv) Lack of working equipments and poor performance of the contractor; and

xv) Poor or lack of provision and use of health and safety gears for workers.

Other important requirements specified in the terms of contract were stated under items fourteen and fifteen to include submission of weekly, monthly, quarterly and yearly reports by the Pos to Kinondoni Municipal Council. These reports could be authenticated by the contractors and *Mtaa* leaders on their correctness. The last condition seemed to give *Mtaa* leaders an opportunity to check and monitor the performance of the Pos in order to check adherence to the contractual obligations; but during the study it was found that this was not happening.

5.5.6 Technological Factors

It was established that, Kawe Ward had limited vehicular access to inner settlements for sustainable SWM. This was due to lack of easily passable roads and the unplanned houses in many settlements. Although heavy vehicles such as lorries and trailers were used in SWC from the collection points along the main roads, pull/push carts were very useful to bring solid wastes from the inner households to collection points (see Plate 5.1 and 5.2). This was practically done under informal

arrangements between the local residents who used to hire youths under agreed payments. The said practice had created the dire need for the majority of local communities in Kawe Ward to construct or buy pull/push carts for those households who did not require the hired youths at a cost ranging from TZS 2000/= (equivalent to US$ 1.8) to TZS 5000/= (equivalent to US$ 4.8) per trip. This amount was to vary depending on distances.

Plate 5.1: Labour Based Solid Waste Collection in Kawe Ward

Source: Photo by author, 2008

Plate 5.2: Solid Waste Collection Point at Mzimuni in Kawe Ward

Source: Photo by author, 2008

5.6 Constraints and Potentials Facing Solid Waste Management Services

Generally, the estimated generation of solid wastes in Kawe Ward was around 162 tones per day, but only about 38 tones (23.4%) was collected per day; franchising was about 31.7 tones (19.6%) and Kinondoni Municipality about 7.1 tones (4.4%) per day. However, like in every aspect of SWM sector in urban areas in Tanzania, PPP in Kawe Ward was facing the following challenges and potentials:

i) There was lack of awareness on the part of local community leaders and their local residents about the provisions of solid waste by-laws and contents of PPP operators and Kinondoni Municipal Council contracts.

ii) The role of residents who were ultimate service users to monitor performance of PPP was marginalised due to lack of clear laws governing their operations at the grassroots level which lessens cooperation from the local community.

iii) Accountability was lacking coupled with poor information flow and link between PPP operators, Ward and *Mtaa* institutions on matters pertaining to monitoring and regulating some settings which suggested the existence of corruption.

iv) Varying political ideologies undermined the common good through reluctance of opposition parties to take part in many developmental activities including payment of waste management services, hence restraining efforts to improve services provision.

v) Undue political interference and poor governance practice exercised by Kinondoni Municipal Council politicians through ad-hoc decisions and working on rumours against PPP operators did not augur well with good governance principles and undermined enforcement of the rule of law.

vi) Unsatisfactory services provided by informal actors particularly youths who had the upper hand from the grass roots, *Mtaa* and Ward leaders simply due to their minimal charges (50 kg bag charged at TZS 200/= (equivalent to US$ 0.2); small plastic bags of less than 15 kg charged at TZS 100/= (equivalent to US$ 0.1) but against low quality service.

vii) Dumpsites were very far away, leading youths to dump waste before they arrive at the official disposal sites; e.g. along Mbezi River Valley (see Plate 5.3).

viii) Failure by Kinondoni Municipal Council to decentralize by-laws and even to translate the existing ones into Kiswahili had left such laws in English, which cannot be understood by the majority.

Plate 5.3: Waste Dumping at Mbezi Valley River at Ukwamani in Kawe

Source: Photo by author, 2008

5.7 Summary of Major Findings From Kawe Ward

The principal findings based on the study of local resource mobilisation towards sustainable solid waste management in Kawe Ward were in five folds as follows:

Firstly, in terms of effectiveness, the study showed that 38 tones (23.4%) was solid waste collected out of 162 tones of solid wastes generated. Before the advent of PPP in 1994, this ratio for Kinondoni Municipality was only 10% out of 1480 tones per day. In terms of wastes recycling, composting and dumping ratios as indicators of compliance with the waste hierarchy principle, the study showed that the percentage of recycled wastes versus land-filled wastes was about 2.6 tones (1.6%) and 2.1 tones (1.3%). These findings showed a tremendous improvement between 1994 and 2008. For the whole of Kinondoni Municipality before the advent of PPP in 1994 these ratios were 2.3 tones (1.4%) and 1.7 (1.1%) respectively.

However, the wastes hierarchy principle was found to be violated by the modes of payments which are made to various solid waste management service providers in the three cases. This was the case because; the service providers were paid per quantity of solid waste disposed off in bulk regardless of the differences in these waste types. This means that, there is no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment.

Secondly, it was further found that the actors involved in local resource mobilization towards sustainable solid waste management, in Kawe Ward clearly are contractors, NGOs, CBOs, WEO, Mtaa leaders, households and individual scavengers. In effect, it was logical to conclude that, the process of private sector participation has created employment, both formally and informally.

Thirdly, in respect to local resources mobilization strategies towards sustainable solid waste management, the study confirmed that, in this Ward: policies, laws and

regulations prefer bottom-up approach to SWM and encourage the formation of various CSOs; informal and formal CBOs and contractors as formal organizations; good planning of settlements, good distribution of waste collection points, and good accessibility of waste collection points. In addition to the above strategies, it was found that local contractors are urged to own capital based and not labour-based technology, though finances are acquired through user fee collections, and subsidy based on public taxation.

Fourthly, local resource mobilization towards sustainable solid waste management faces a number of constraints. These include: inadequacy of local resource mobilization; poor coordination of a solid waste management system; inadequacy of private sector monitoring; lack of a solid waste management policy framework for involvement of the informal sector; lack of proper technology for supporting recycling activities; unavailability of land for disposal sites; polluters with poor purchasing power; and neglection of the waste hierarchy principle in contracts design.

Lastly, potentials facing local resource mobilizations towards sustainable solid waste management, in the area of study before and after the advent of PPP in 1994 are: availability of labour-based technology; willingness to pay for solid waste management services; relatively favourable policy and legal environment; local political support; progressive compliance with the waste hierarchy principle; and promotion of self-employment creation.

CHAPTER SIX

6.0 LOCAL RESOURCES MOBILIZATION THROUGH INFORMAL COMMUNITY BASED ORGANIZATIONS: THE CASE OF SINZA WARD

6.1 Introduction

This chapter addresses the following issues: administrative profile of Sinza Ward; socio-economic and infrastructure profile of Sinza Ward; waste sampling frequency; types of solid waste mostly produced by households in Sinza Ward; methods of disposal of solid wastes in Sinza Ward; methods of solid waste storage in Sinza Ward; cost recovery in solid waste collection in the study area; SWM fees, service rating and quality in Sinza Ward; determinants of SWM service quality in Sinza Ward; local resources mobilization and use; constraints and potentials facing SWM in Sinza Ward; and lessons learnt from Sinza Ward.

6.2 Profile of Sinza Ward

6.2.1 Location of Sinza Ward

Sinza Ward is located in the Southeast and about five kilometers from Kinondoni Municipality headquarters. It is bordered by Kijitonyama and Manzese Wards in the Southeast, Ubungo Ward in West and Kawe Ward in Northeast. The Ward was divided into five settlements and it was relatively well planned, except some few parts of Sinza Block “E” Sinza Block “D”; and Sinza Block “C”.

6.2.2 Socio-economic Profile of Sinza Ward

The major economic activities undertaken by respondents in Sinza Ward were highly varied. Analysis of the economic activities indicated that 38% of the people were

engaged in private business, 18% were house-wives, and about 10% were either government, or parastatal employees. About 9% were employed in the private sector, while the remaining 25% were either day workers or wage earners. Respondents were further asked to identify their religious faith/affiliation. It turned out that 99% respondents answered this question, among which 66% were Christians, and about 33% were Moslems. One respondent decided to abstain.

Table 6.1: Sinza Ward Population 2002 to 2010

Mitaa names	2002	2004	2006	2008	2010
Sinza A	5,877	6,082	6,269	6,436	6,590
Sinza B	5,585	5,785	5,972	6,129	6,270
Sinza C	10,492	10,898	11,255	11,567	11,848
Sinza D	4,318	4,468	4,603	4,722	4,810
Sinza E	3,887	4,024	4,146	4,268	4,350
Total	36,323	37,730	39,015	40,158	41,153

Source: URT (2002 and 2006)

Demographically, Sinza Ward was not very densely populated; it had only a total of 40,676 people. Table 6.1 clarifies the situation. And Figure 6.1 below depicts Sinza Ward administrative boundaries. (URT, 2008)

6.2.3 Infrastructure Profile of Sinza Ward

The institutional and spatial conditions and households participation in SWM in Sinza was an interesting case. Physical observation revealed that infrastructure was relatively good. Also, a number of community based organizations (CBOs) had emerged in dealing with solid waste management activities in urban areas. One of

the CBOs' major goals was to improve the environment through physical solid waste management engagement for the purpose of self-employment creation. The community members were the solid wastes generators and it was their responsibility therefore, to mobilize resources towards sustainable solid waste management services through payment of fee service charges. Thus, if local community members were willing to participate in SWM through payment of collection charges in real terms our municipalities would remain clean and attractive.

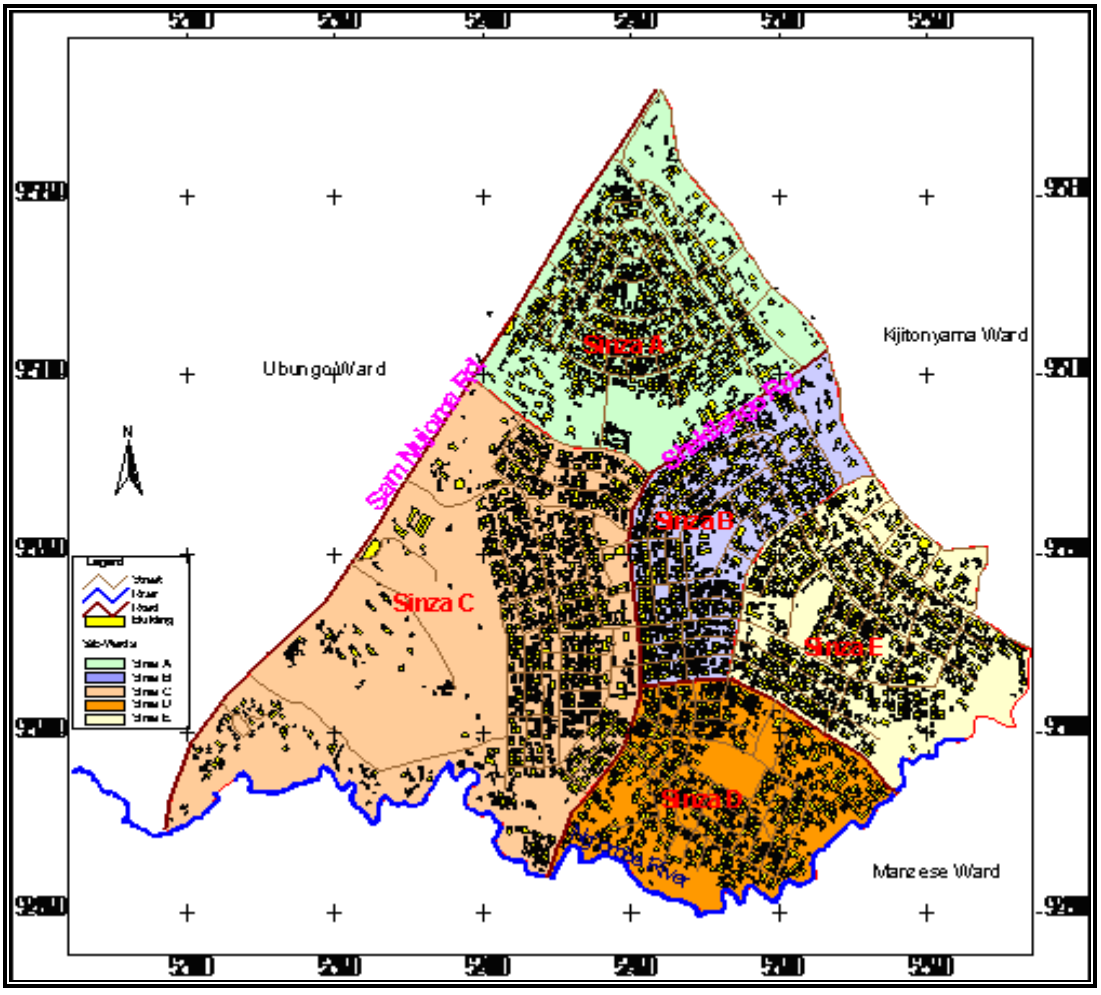


Figure 6.1: Sinza Ward Administrative Boundaries and Mitaa

Source: Kinondoni Municipal Council and field work, 2008

6.3 Performance of Solid Waste Management Services

6.3.1 Solid Waste Generation and Collection per Day

The ratio of wastes collected versus wastes generated is a good measure of the effectiveness of SWM services. If the ratio is 100% then we have the maximum possible effectiveness. As far as Sinza Ward was concerned, the field data collected during this study in 2008 showed that solid wastes collected was about 43 tones (41.2%) out of 105 of solid wastes generated per day. This implied that about (58.8%) of the citizens were not getting SWM services as required by the equity principle.

6.3.2 Waste recycling, Composting and Dumping Ratios per Day

This study conducted a compliance audit with respect to the wastes hierarchy principle. According to this principle, in designing wastes management strategies, preference should be given to those methods which are more environmentally sound. The study was guided by the assumption that, the wastes hierarchy principle entails a five-step order of priority in which wastes prevention has the highest priority being followed by re-use, recycling, recovery and wastes disposal as the last option.

From a quantitative aspect, in order to make this compliance audit a success, compliance with the wastes hierarchy principle was checked through two ratios. These were the percentage of recycled wastes versus land-filled wastes and the percentage of composted wastes versus land-filled wastes. The quantitative findings from the field were as follows: the percentage of recycled wastes versus land-filled wastes was about 1.8 tones (1.7%) of solid wastes; and the percentage of composted wastes versus land-filled wastes was about 1.6 tones (1.5%) of solid wastes. Due to

the demands of the wastes hierarchy principle, the bigger the ratios the more the principle is complied with. Thus, in this case it was revealed that the level of compliance with the wastes hierarchy principle was still negligible.

In case of qualitative perspective, compliance with the wastes hierarchy principle was checked by examining the modes of payments which are made by various solid waste management service providers. For the wastes hierarchy principle to be complied with there should be different price tags for biodegradable wastes, re-usable wastes, recyclable wastes, and inert wastes respectively. But, if the contractors are paid per quantity of solid wastes disposed off in bulk, regardless of the differences in these waste types, then, there can be no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment.

Thus, an examination of the contracts between Kinondoni Municipality Council and solid waste management service providers showed that the mode of payment to service providers was based on the quantity of solid wastes disposed off in bulk regardless of the differences in these waste types. Specifically, the contracts were pegged against the "Waste Management and Refuse Collection Fees" as amended by the Kinondoni Municipal Council in 2004. In this case, these refuse collection charge rates were contrary to the demands of the wastes hierarchy principle.

6.3.3 Residents Satisfaction in Solid Waste Management Services

During this study a survey was conducted asking 410 households if they were satisfied with the SWM service they received. In order to test this satisfaction the

following question was posed: *If you receive SWM services what is your opinion of the service provided?* The possible alternative responses were: very satisfied; reasonably satisfying; needs improvement; don't know; and no service received. The findings on the degree of satisfaction from SWM services in Sinza Ward were as follows: 25 (6.1%) out of 410 households the answer was very satisfying; 149 (36.4%) out of 410 households the answer was reasonably satisfying; 102 (24.9%) out of 410 households the answer was needs improvement; 9 (2.4%) out of 410 households the answer was don't know; and 124 (30.2%) out of 410 households the answer was no service received.

6.4 Actors Involved in Local Resources Mobilization in Sinza Ward

The field study revealed that, in Sinza Ward key actors involved in solid waste management included informal youth groups, individual scavengers, Mtaa leaders, and the Kinondoni Municipality. The dominant youth group was known as Sinza Community Environmental Management Group (SCEMG)).

6.5 Local resources Mobilization Strategies in Sinza Ward

6.5.1 Financial Factors

It was learnt from the research field that no single hamlet had formal budget or financial planning for local socio-economic development in the area of study. Furthermore, the researcher found that LRM capacity towards sustainable SWM in the area of study included push/pull carts, availability of land for secondary dump site, and human resources. However, in addition to the above resources informal youths, cash contribution from trustees, political support from mitaa leaders,

counsellor and Member of Parliament, equipments such as trailers from the municipal, and volunteerism from good Samaritans, were summarised in Table 6.2.

Table 6.2: Local Resources Mobilization Capacity in the Study Area

No.	List of contributors	Types of local resources contributed/pledged for effective and efficient SWM						
		Push /pull carts	Land	Human resource	Cash	Political support	Equip-ments	Volunteerism
1.	SCEMG Trustees	++	+	++	++	+++	+	+++
2.	KMC	+	++	+	++	+	++	+
3.	Mitaa leaders	+	+	++	+	+++	+	++
4.	Researcher meeting	++	+	+	++	+++	++	+++
5.	Member of Parliament	++	+	+	++	+++	+	+++
6.	Residents	+	+	+	++	++	+	++
7.	Informal youths	++	+	+++	+	+++	++	+++

Key: += minimum: + += moderate: + + += high

Source: Field work, 2008

It was further reported that SCEMG members apart from charging a negotiable or small fee from local households or residents compared to the amount charged by private operators, still each youth earned up to TZS 15.000/= (US$ 13.6) net per day. The survey of Sinza Ward indicated that the surrounding environment looked relatively cleaner every day than those days when they used to employ private operators.

The informal group (i.e. SCEMG) chairperson reported that in order to maintain SWM tools and to sustain excellent services in Sinza area the pull/push carts owners including trustees and other providers decided to rent each push cart at the value of TZS 5.000/= (US$ 5.4) per day. These rental charges were surrendered to owners daily. When youths were probed on how much they saved per day, they confirmed that they managed to pay for rent, garbage collection and daily meals only.

6.5.2 Organisational Factors

It was found by the researcher that an informal local community based organization (CBO) called Sinza Community Environmental Management Group (SCEMG)) in Sinza Ward played a very important role towards the success of LRM towards sustainable SWM. This informal group was recognized by the Sinza Ward local government since 2002. SCEMG had about 47 active members (40 men and 7 women) under own informal management and leadership. About other 13 youths had their own push/pull carts, and their activities had changed into a vibrant and lucrative business.

It was further reported by informants that about 210 household heads that some of the trustees had decided to support this informal SWM youth group as one ways of local community participation because of main two reasons: to create self-employment for these local youths particularly for those standard seven leavers; and to reduce the burden and liabilities of hazardous health emanating from poor SWM in Sinza Ward. This meant that, the SWM project at Sinza Block “C”, Block “D”

and Block “E” was implemented under the supervision of informal CBO known as Sinza Community Environmental Management Group. Thus, community organization was linked with Ward and *Mitaa* leaders who were playing an active role during meetings of sensitization and mobilization of resources.

It was observed further that good linkage with external institutions such as regular communication with the MSWM and a good educational background of the CBO management and leaders add to the productivity of the project hence relatively sustainable. The linkage with and use of grassroots (at least ten cell leaders) especially in LRM with appropriate, timely and vigour information dissemination to local communities are most likely to enhance participation in sustainable SWM projects.

Other important links played by this informal local organization included regular consultations with Sinza Ward Waste Management Officer, and the Kinondoni Municipal Health and Waste Management Department. These links assisted to build trust among SWM service users or stakeholders in general including tenants to participate and contribute both tangible and intangible resources even though the community organization had not been statutorily recognized. It was further noted that regular and stable links with other service users or stakeholders build community participation of local residents to contribute to the SWM project. Moreover, such links assist to bring in resources and skills which are not obtainable within the community such as technical expertise, and training.

Plate 6.1: A Meeting of the Informal Management and Leadership of SCEMG

Source: Photo by author, 2008

6.5.3 Spatial factors

The institutional and spatial conditions and households participation in SWM in Sinza was an interesting case. The researcher physical observation revealed that infrastructure was relatively good and settlements were planned. Thus, waste collection points were easily accessible both by vehicles and push/pull carts. For these reasons, Sinza Ward was relatively cleaner.

6.5.4 Institutional Factors

The study informants revealed that, there was a very low level of institutional set-up that could allow an effective and efficient inter-organisational collaboration towards a reasonable initiative for better performance in SWM. As indicated above, most of the existing groups were informal youth organisations that made a living through the

provision of SWM services.

6.5.5 Technological Factors

In collecting solid wastes the majority of people used push/pull carts which were made of wood or metal, and/or transport vehicles. While heavy vehicles such as lorries and trailers were used in SWC mainly from the collection points, and youths pull/push carts were very useful to transfer solid wastes from the less accessible households though most of the settlements in Sinza Ward were relatively well planned. However, the challenge was that most of the youths pull/push carts were collecting solid wastes without any protective gear such as groves, gum boots, rain coats etc. Plate 6.2 below shows push/pull carts loaded with solid waste materials at an official collection point at Sinza "C" awaiting the trailer.

Plate 6.2: Pull/push Carts Awaiting Daily Trailer from the Dumpsite

Source: Photo by author, 2008

6.5.6 Legal Factors

This study established that SWM project in Sinza Ward was implemented under the supervision of unregistered or informal CBO since year 2002. This was done after an establishment of the three autonomous Municipalities in year 2000; where Kinondoni Municipality took immediate measures to amend the 1994 Dar es Salaam City Council SWM by-laws. The intention was to remedy the shortcomings existing in the by-laws of 1994 such as the control of informal activities pertaining to SWM as well as meeting the current demands and situations which include terms or duration of PPP operators, collection of revenue from clients, quality of services rendered and so forth. Then Kinondoni Municipality Solicitor was installed to ensure implementation of these new by-laws. The main objective of these new by-laws among other things was to enable a simple and quick privatization process and effective implementation of SWM in the municipality.

However, the study informants revealed that these by-laws in question were poorly administered as there was no strong and proper machinery to enforce them for instance, to arrest people who are throwing waste products into the street, and footpaths, or along the Municipal roads as it was sometimes happening in Sinza Ward. The study established further that, under these by-laws the households and commercial waste producers are liable, among other things, to provide adequate receptacles or refuse storage. They further prohibit the throwing or depositing of waste on the streets or on open spaces which were not designated as collection points. They empower the Municipal Councils to make offenders pay for causing the problem. There were enough legislations concerning SWM at this time in Kinondoni

Municipality to discipline and enforce the public behaviour, although there were some pieces which were already outdated and inappropriate of the actual conditions for the Municipal life such as in Sinza Ward.

The study further established that, relatively unlike in other case studies in Sinza Ward there was an impressive situation which did not allow conflicting interests between the central government, local government and politicians in implementing and enforcing these by-laws pertaining to SWM. Because such SWM by-laws implementation laxity could imply that there was no clear demarcation of powers between these multiple-stakeholders in enforcing and instituting the prevailing by-laws particularly, in SWM in the area of study.

6.6 Potentials Facing Local Resources Mobilization in Sinza Ward

As KMC reported earlier out of 105 tones of solid wastes generated per day, about 41.2% was collected; this was among the best performances in SWM in Kinondoni Municipal Council. The reason was that Sinza was endowed with about five major factors, which include: good political will and support, the presence of mixed income groups, majority of houses were occupied by the owners, accessibility, and availability of the trailers. These potentials are expanded in the following sections.

Political will and support: The study informants reported that community gets support from ten cells and *Mitaa* leaders; councillor and the Member of the Parliament. This support had a positive impact on solid waste collection because these leaders were recognized and respected by the local community. Their

involvement in sensitizing and mobilizing the local community to pay service user charges and remove solid waste out of their premises simplified SWM in that Ward.

The presence of mixed income groups: The majority of people Sinza Ward were either high or medium income groups; and it would seem like when high income groups support any project or operation, some community members tend to get more confidence in the whole operation.

Many houses are occupied by landlords: The study informants further, reported that the majority of the houses were occupied by the owners, i.e. it was estimated that about more than 65% of the houses in Sinza Ward were occupied by the owners. This proportion was enough to form a strong social capital, and made it easy to team up to contribute and monitor SWM operations daily.

Presence of local knowledge and know-how: As it has been said before, the majority of Sinza Ward local residents were educated and had a strong sense of community participation particularly when a social problem like SWM faces them.

Accessibility and availability of SWC facilities: It was further reported by KMC that more than 85% of Sinza Ward was a planned settlement which gave advantage to solid waste collectors because they could go round easily due to good roads. Sinza was one of ten Wards which were run by Waste Management Officers plus a standby daily trailer from Kinondoni Municipal Council.

6.7 Summary of Major Findings from Sinza Ward

The principal findings based on the study of local resource mobilisation towards sustainable solid waste management in Sinza Ward were in five folds as follows: Firstly, in terms of effectiveness, the study showed that the ratio of wastes collected versus wastes generated was 41.2%. Before the advent of PPP in 1994, this ratio for DCC was only 10% out of 1480 tones per day. In terms of wastes recycling, composting and dumping ratios as indicators of compliance with the wastes hierarchy principle, the study showed that the percentage of recycled wastes versus land-filled wastes and the percentage of composted wastes versus land-filled wastes were 1.8 tones (1.7%) and 1.6 tones (1.5%) respectively. These findings showed a tremendous improvement between 1994 and 2008. For the whole of Kinondoni Municipality before the advent of PPP in 1994 these ratios were 2.3 tones (1.4%) and 1.7 tones (1.1%) respectively. These findings too showed a tremendous improvement between 1994 and 2008.

However, the wastes hierarchy principle was found to be violated by the modes of payments which are made by various solid waste management service providers in the three cases. This was the case because; the service providers were paid per quantity of solid wastes disposed off in bulk regardless of the differences in these waste types. This meant that, there was no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment.

Secondly, concerning the actors involved in local resource mobilization towards sustainable solid waste management, the study showed that, the solid waste management activities in this Ward, clearly involved contractors, NGOs, CBOs,

WEO, Mtaa leaders, households and individual scavengers. In effect, it was logical to conclude that, the process of private sector participation had created employment, both formally and informally.

Thirdly, in regard to local resources mobilization strategies towards sustainable solid waste management, the study confirmed that, in this Ward: policies, laws and regulations prefer bottom-up approach to SWM and encourage the formation of various CBOs; good planning of settlements; good distribution of waste collection points; good accessibility of waste collection points; local contractors own capital based technology and not labour-based technology.

Fourthly, it was learnt that, the quest for resources mobilization towards sustainable SWM faces a number of constraints. These include: inadequacy of local resource mobilization; poor coordination of a solid waste management system; inadequacy of private sector monitoring; lack of a solid waste management policy framework for involvement of the informal sector; lack of proper technology for supporting recycling activities; unavailability of land for disposal sites; polluters with poor purchasing power; and neglection of the wastes hierarchy principle in contracts design.

Lastly, it was learnt that in Sinza Ward before and after the advent of PPP in 1994 the quest for resources mobilization towards sustainable SWM faces a number of potentials. These are: availability of labour-based technology; willingness to pay for solid waste management services; relatively favourable policy and legal environment; local political support; progressive compliance with the wastes hierarchy principle; and promotion of self-employment creation.

CHAPTER SEVEN

7.0 LOCAL RESOURCES MOBILISATION THROUGH FORMAL NON-GOVERNMENTAL ORGANIZATIONS: THE CASE OF HANNA NASSIF WARD

7.1 Introduction

This chapter addresses the following issues: administrative profile of Hanna Nassif Ward; socio-economic and infrastructure profile of Hanna Nassif Ward; Kisutu Women Development Trust in Hanna Nassif Ward; organization and institution factors in Hanna Nassif Ward; technological factors in local resources mobilization by KIWODET; residents' satisfaction in SWM performed by KIWODET; constraints and potentials facing SWM; and lessons learnt from Hanna Nassif Ward.

7.2 Profile of Hanna Nassif Ward

7.2.1 Location of Hanna Nassif Ward

Hanna Nassif Ward is situated about four kilometres to the Northwest of the Dar es Salaam City centre and almost one kilometre from Kinondoni Municipality headquarters. This Ward was divided into three sub-wards: Kisutu, Mkunguni, and Hanna Nassif (see Figure 7.1). The Ward bordered a high income residential area to the Northeast, the Msimbazi creek to the East and a planned residential area to the South. The main prominent physical feature in the Ward is the Msimbazi valley to the East part of the Hanna Nassif sub-ward/settlement. The valley delineates the Hanna Nassif settlement from the City centre and the neighbouring Upanga residential area. The valley was rapidly being invaded by property developers (see Figure 7.2), a move which had negative impacts on solid waste management since

there were neither defined neither roads nor good footpaths.

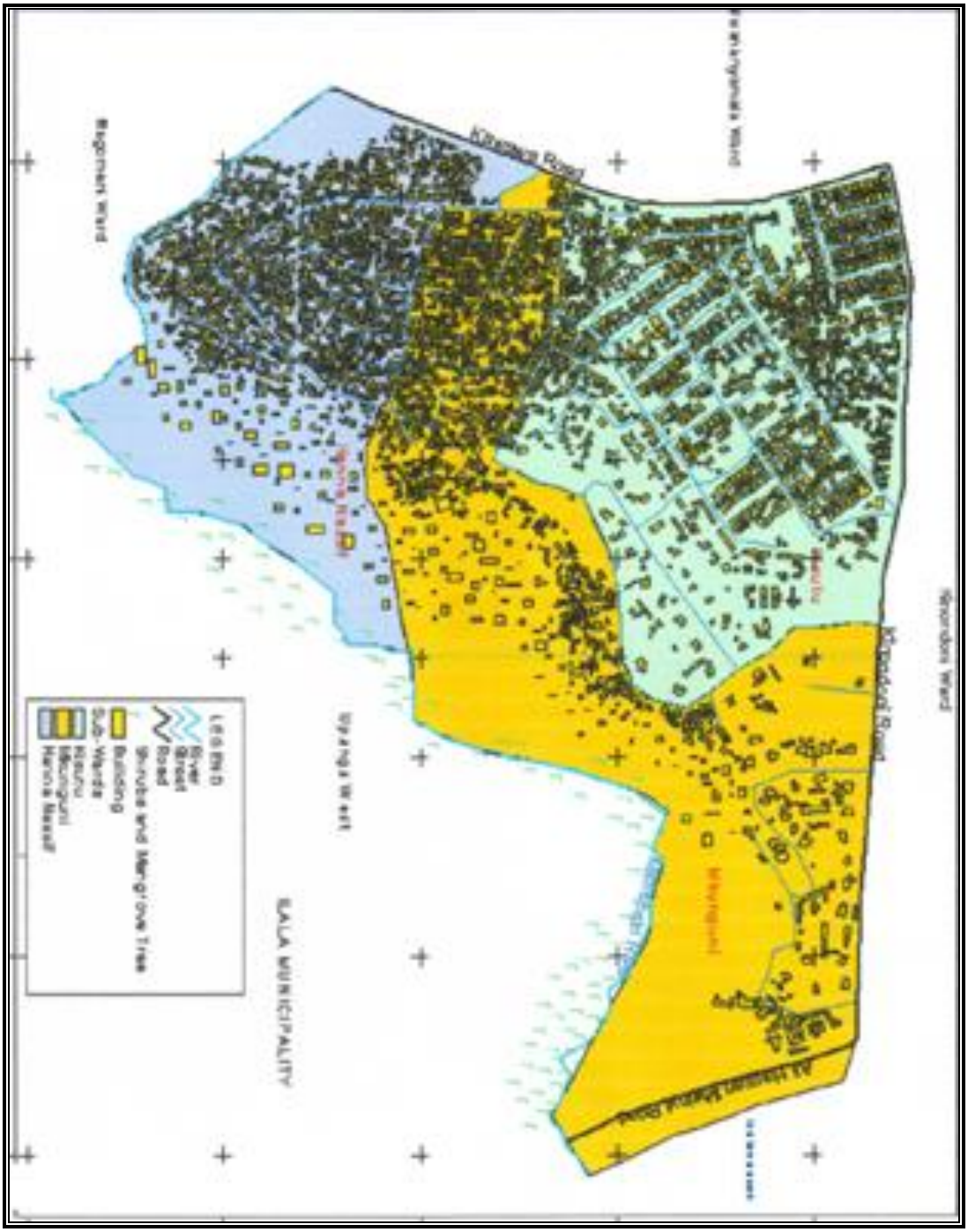


Figure 7.1: Hanna Nassif Ward Administrative Boundaries and Mitaa

Source: Kinondoni Municipality, 2008

Figure 7.2: Informal Property Development in Hanna Nassif Ward

Source: Kinondoni Municipality, 2009

7.2.2 Socio-economic Profile of Hanna Nassif Ward

The Ward was highly consolidated and densely populated. The Ward area was about 2.04 square kilometres with a population of around 37,000 people, 8,382 households, and 3,149 buildings. In general socio-economic profile of this Ward was moderate.

7.2.3 Infrastructure Profile of Hanna Nassif Ward

Infrastructure conditions of Hanna Nassif Ward were not very attractive. About 98% of Hana Nassif and Mkunguni residents were still living in unsurveyed area because land or accommodation was cheap and the area was closer to work places. Because of this, WAT Human Settlements Trust (an NGO) was working in the area to ensure that land was surveyed and owners got title deeds. Generation of domestic solid waste in Hanna Nassif Ward was about 74 tones but actual collection was only about 47.2% per day. Physical observation revealed that about 30% of most of infrastructure such as roads, sanitation, and drainage systems were absent or poor. This case was presented by findings generated from Kisutu Women Development Trust (KIWODET), which was based in Hanna Nassif Ward, located within Kinondoni Municipality in Dar es Salaam City.

7.3 Performance of Solid Waste Management Services

7.3.1 Solid Waste Generation and Collection Rate per Day

The ratio of wastes collected versus wastes generated is a good measure of the effectiveness of SWM services. If the ratio is 100% then we have the maximum possible effectiveness. As far as Hanna Nassif Ward was concerned, the field data collected during this study in 2008 showed that the ratio of wastes collected versus wastes generated was about 32 tones (43.5%). This meant that about 56.5% of the residents were not getting SWM services as required by the equity principle.

7.3.2 Waste recycling, Composting and Dumping Ratios per Day

This study conducted a compliance audit with respect to the wastes hierarchy principle. According to this principle, in designing wastes management strategies,

preference should be given to those methods which are more environmentally sound. The study was guided by the assumption that, the wastes hierarchy principle entails a five-step order of priority in which wastes prevention has the highest priority being followed by re-use, recycling, recovery and wastes disposal as the last option.

From a quantitative aspect, in order to make this compliance audit a success, compliance with the wastes hierarchy principle was checked through two ratios. These were the percentage of recycled wastes versus land-filled wastes and the percentage of composted wastes versus land-filled wastes.

The quantitative findings from the field were as follows: the percentage of recycled wastes versus land-filled wastes was about 1.4 tones (1.9%); and the percentage of composted wastes versus land-filled wastes was about 1.2 tones (1.6%). Due to the demands of the wastes hierarchy principle, the bigger the ratios the more the principle is complied with. In this case it was revealed that the level of compliance with the wastes hierarchy principle was still negligible.

In case of qualitative perspectives, compliance with the wastes hierarchy principle was checked through examination of modes of payments which were made to various solid waste management service providers. For the wastes hierarchy principle to be complied with there should be different price tags for biodegradable wastes, re-usable wastes, recyclable wastes, and inert wastes respectively. But, if the contractors are paid per quantity of solid wastes disposed off in bulk regardless of the differences in these waste types, then, there could be no incentive for them to

encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment.

An examination of the contracts between Kinondoni Municipality Council and solid waste management service providers showed that the mode of payment to service providers was based on the quantity of solid wastes disposed off in bulk, regardless of the differences in these waste types. Specifically, the contracts were pegged against the "Waste Management and Refuse Collection Fees" as amended by the Kinondoni Municipal Council in 2004. These refuse collection charge rates were contrary to the demands of the wastes hierarchy principle.

7.3.3 Residents' Satisfaction in Solid Waste Management Services

During this study a survey was conducted asking 112 households if they were satisfied with the SWM service they receive. In order to test this satisfaction the following question was posed: *If you receive SWM services what is your opinion of the service provided?* The possible alternative responses were: very satisfied; reasonably satisfying; needs improvement; don't know; and no service received. The findings on the degree of satisfaction from SWM services in Hanna Nassif Ward were as follows: about 9 (7.3%) out of 112 households the answer was very satisfying; about 42 (37.6%) out of 112 households the answer was reasonably satisfying; about 23 (20.1%) out of 112 households the answer was needs improvement; about 4 (3.6%) out of 112 households the answer was don't know; and about 35 (31.4%) out of 112 households the answer was no service received.

7.4 Actors Involved In Local Resources Mobilization in Hanna Nassif Ward

The study established that, Hanna Nassif Ward was most endowed with experienced formal organizations in Kinondoni Municipality. But predominantly, it was served by two organizations; one a CBO called Kinondoni Moscow Women Development Association (KIMWODA) and another was an NGO called Kisutu Women Development Trust (KIWODET). KIMWODA was established in 1994, by a group of 10 women as a voluntary organization to deal with SWM in Hanna Nassif Ward. At the time of its establishment, each household made its own private arrangements to dispose off its waste, either by engaging an informal collector {most of whom were children} or by burying, burning or dumping their waste. As a result of these practices, the settlement was littered with waste. KIMWODA took up the challenge of collecting waste in the settlement on a voluntary basis. Later it was officially appointed by the DCC to collect waste in Hanna Nassif Ward, which compelled it to register as a trading entity in 1995.

Later it was observed that most of the members were kin relatives of the founding members and that entry was not open to community members as was the case with community based organizations. Thus, KIMWODA was no longer operating as a CBO but as an NGO, because its members who were engaged in various aspects of SWM were paid wages and its relationship with the community was that of provider and consumer. Nonetheless, in performing its functions, KIMWODA collaborates with other actors in SWM such as the waste pickers, informal collectors and other community based organizations, particularly on the aspect of waste recovery. These actors were collecting wastes on behalf of KIMWODA on payment basis and also

supplied recyclable materials. With that experience, KIMWODA changed its activities to HIV/AIDS. On the other hand, Kisutu Women Development Trust (KIWODET) was a women's group operating as a community based organization in Hanna Nassif Ward. It was registered in June 1998 as an NGO and started venturing into SWM as one of their prospective areas. Majani (2000) attributes the development of this kind of non-governmental organization on the initial success of KIMWODA, which was the first grass root organization in Hanna Nassif Ward. Thus, at the time of this study, KIWODET's main activity was SWM. It also undertook waste recovery of about twelve materials such as glass, plastic, beer cans, papers, etc. More details on how KIWODET was operating are described in the ensuring sections.

7.5 Local resources Mobilization Strategies in Hanna Nassif Ward

7.5.1 Financial Factors

KIWODET got money through user fee collections. Table 7.1 displays the trends of funds accrued from SWM for the period between 2002 and 2008.

Table 7.1: KIWODET Trends of Revenue Collected from SWC

Financial year	Expected amount in TZS in Millions	Actual amount collected in TZS in Millions	Uncollected in TZS in Millions
2003/4	13.8	9.1	4.7
2004/5	15.2	8.6	6.6
2005/6	17.6	12.1	5.5
2006/7	19.1	13.0	6.1
2007/8	21.6	16.1	5.4
Total revenue	87.3	58.9	28.4

Source: KIWODET, 2008/09

The figures in Table 7.1 were calculated based on total number of households in the settlement multiplied by TZS 1000/=. However, when total revenue collected was compared to cost of SWM services there was little economic viability of providing SWM by KIWODET in Hanna Nassif Ward. This was because an interrelationship triad or three closely elements that was capital cost, service levels, and the accrued revenue in SWM service delivery did not exist (Fox, 1994 and Kyessi, 2002:7). This was happening when Hanna Nassif Ward was considered to be a medium income group and therefore households served by KIWODET were supposed to pay TZS 1000/= per month as waste collection charges (see Appendix 6). KIWODET had been able to mobilize other local resources such as personnel, labour through youths, vehicles and trailers, and enhancement of residents' awareness about SWM. It was further observed that only about 20% of the households in the areas served by KIWODET pay collection charges, although the majority of the residents were still complaining about the uncollected wastes (see Table 7.2).

Table 7.2: Level of Satisfaction by the Solid Waste Management Services

Rating	No. of Households	%	Respondents comments
Excellent SWC services	10	10	SWC actors are very active and with a lot of commitment
Very Good SWC services	16	16	The environment is relatively clean compared to KMC services
Good SWC services	18	18	Actors are moderately active although fails to collect service charges in time
Fair SWC services	32	32	Actors are not active enough as they do not appear regularly
Poor SWC services	24	24	Actors are almost dormant because they fail to render services regularly
Total	100	100	-

Source: Field work, 2008/09

The local government leaders were praised by the KIWODET management for being instrumental in mobilizing residents to pay for SWM services; however, they were still urged to put more effort in enforcing the by-laws related to the collection of charges. Table 7.3 displays the level of residents' willingness to pay for SWM in ranges between TZS 500/= to 3000/= per month.

Table 7.3: Level of Willingness to Pay for Solid Wastes Management Services

Range of willingness to pay in TZS	No of Households	%	Respondents comments
500/= to750/=	19	19	Affordable but, actors lacks close follow ups
750/= to 1000/=	23	23	Affordable but, actors lacks close follow ups
1000/= to 1500/=	21	21	Allow instalments payment per day/ week
1500/= to 2000/=	14	14	Affordable for high income earners
2000/= to 2500/=	11	11	Affordable for high income earners
2500= to 3000=	8	8	Let businessmen rates be reduced from Tshs.5000= & above to this range.
3000= and above	4	4	Absolutely not affordable
-	100	100	-

Source: Field work, 2008/09

In view of the above level of willingness to pay for SWM (see Table 7.3), Table 7.4 portrays municipal revenue collection in fiscal year 2007/08 and 2008/09 in Hanna Nassif Ward.

Table 7.4: Hanna Nassif Ward Revenue Report for 2007/08 and 2008/09

Revenue collection sources	2007/08 (in TZS in Millions)	2008/09 (in TZS in Millions)
Shops	4.4	6.2
Restaurants	2.8	3,3
Hotels	1.2	1.1
Other businesses	1.9	1.1
Households	8.6	4.5
Institutions	4.7	6.9
Informal sector	1.7	1.0
Total	25.3	24.1

Source: KMC, 2010

Like in any other in-depth case study the advanced reasons for shortfalls included underdevelopment of the informal SWM sector, weak patriotism, growing number of defaulters, and poor by-laws enforcement (KMC, 2008).

7.5.2 Organizational Factors

This research established that, KIWODET was one of the founder organisations as key role-players in solid waste management in the study area. It had about (KIWODET) 20 women members led by a chairperson. During this study, it was run by seven active members, experienced and committed members including chairperson, secretary, cashier, and four collection zone supervisors plus twelve employees (see Figure 7.3).

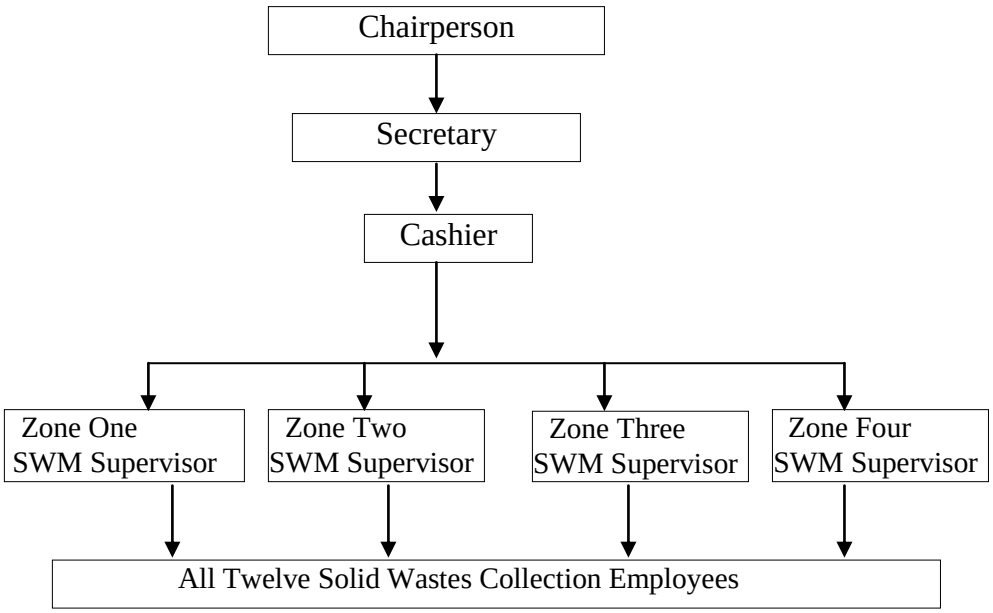


Figure 7.3: Organization Chart of Kisutu Women Development Trust

Source: Kisutu Women Development Trust, 2009

KIWODET developed from local community members and it was therefore, easy to display a peer group organization with a hierarchy which draws a distinction between ordinary members and those who hold administrative positions in addition to their membership. Also, KIWODET had good relationship with local government authorities, because she enjoys political support and reliable SWM tenders from Kinondoni Municipal Council. During this study KIWODET was vulnerable to either partnership or corporate taxation, because it was run as any other private operator in SWM activities.

7.5.3 Spatial Factors

It was established that, Hanna Nassif was one of the major informal settlements in Kinondoni Municipality. During the rainy season the settlement did not experience too much flooding due to its relatively good drainage channels. Also, the settlement had basic infrastructure including community access roads, SWM and other services. During this study it was found out that about 22.2 tones out of 74 tones (30%) of crude solid wastes was normally dumped in Msimbazi Valley, about 33.3 tones out of 74 tones (45%) was stored in containers (e.g. plastic bags or dust bins or at KIWODET open space and later collected and disposed off in trucks or push carts), and about 18.5 tones out of 74 tones (25%) was thrown in open pits or burnt.

7.5.4 Institutional Factors

KIWODET was formed as a formal group which was officially registered in 1999 with the purpose of undertaking activities which would generate income, and SWM was one prospective area of its operations. Thus, it was recognised by the

government. At the period of the study, KIWODET and Mazingira Group were contracted by KMC to collect solid waste in Hanna Nassif, Kisutu, and Mkunguni sub-wards.

7.5.5 Technological Factors

The researcher established that push/pull carts are used and are able to negotiate through narrow roads and footpaths where lorries could not go. Generally, KIWODET had no enough collection points where solid wastes could be sorted out.

Table7.5: Types of the Equipments used by KIWODET

Type	Required	Available	Deficit	Remarks
Office space	1	1	0	Inadequate space
Computers	2	0	2	Adequate
Gum boots	25	12	13	Inadequate
Gears	50	24	26	Inadequate
Trailers	4	2	2	Inadequate
Tractors	2	1	1	Inadequate
Trucks	4	1	3	Inadequate
Push carts	25	12	13	Inadequate
Cell phones	7	2	5	Inadequate
Wheel barrows	25	6	19	Inadequate

Source: Kisutu Women Development Trust, 2008

However, it was observed that some of the KIWODET members performed SWM activities without some protective gears such as folks, gum boots, groves, face masks, and proper garments (see Plate 7.1). In addition, SWC was done manually by using plastic buckets, shovels and worn out locally made basket wickers (*matenga*) in order to reduce costs of operations. This study revealed that there were inadequate financial resources to acquire appropriate SWC gears (see Table 7.1).

Plate 7.1: A woman Using Bear hands to Clean a Street in Hanna Nassif

Source: Photo by author, 2008.

7.5.6 Legal Factors

Given that KIWODET was a formal organisation it follows that it had a constitution, by-laws and other documented norms of conduct. Due to the organization status, it was recognised by the government and this recognition bestows trust on KIWODET in the eyes of its other customers.

7.6 Constraints and Potentials Facing LRM in Hanna Nassif Ward

KIWODET was performing well financially apart from failure to pay solid waste collection fees by some residents, though their best clients included popular institutions such as the United Nations and Swaziland Embassy, plus the municipality itself.

Apart from the fact that KIWODET's main activity was SWM, it also undertook waste recovery and recycling materials such as glass bottles, plastic bottles and containers, beer cans etc. Upon retrieval, the materials were stored until enough quantities had been collected to justify hiring a truck to transport the materials to the selling points. The main buyer of the recyclables was Tanpack industries in Mikocheni area. KIWODET used push carts, wheel barrows and sometimes sacks in order to carry these materials. The cost of hiring a truck ranged between Tshs. 40.000/= to TZS 60.000/= (or equivalent to USD 33.0 to 50.0). To ease its operations, KIWODET had constructed a collection point in front of their office where municipal trailers were stationed (see Plate 7.2) before wastes are deposited at the former Kigogo dumpsite.

7.7 Summary of Major Findings From Hanna Nassif Ward

The principal findings based on the study of local resource mobilisation towards solid waste management in Hanna Nassif Ward were in five folds as follows:

Firstly, in terms of effectiveness, the study showed that the ratio of wastes collected versus wastes generated was 43.5%. Before the advent of PPP in 1994, this ratio for DCC was only 10% out of 1480 tones per day. In terms of wastes recycling, composting and dumping ratios as indicators of compliance with the wastes

hierarchy principle, the study showed that the percentage of recycled wastes versus land-filled wastes and the percentage of composted wastes versus land-filled wastes were 1.4 tones (1.9%) and 1.2 tones (1.6%) respectively. These findings showed a tremendous improvement between 1994 and 2008. For the whole of Kinondoni Municipality before the advent of PPP in 1994 these ratios were 2.3 tones (1.4%) and 1.7 tones (1.1%) respectively.

Plate 7.2: Stationed Trailers Near KIWODET Offices

Source: Photo by author, 2008.

However, the wastes hierarchy principle was found to be violated by the modes of payments which were made by various solid waste management service providers in the three cases. This was the case because; the service providers were paid per quantity of solid wastes disposed off in bulk, regardless of the differences in these waste types. This meant that, there was no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment.

Secondly, in case of the actors involved in local resource mobilization towards sustainable solid waste management, the study showed that, solid waste management activities in this Ward, clearly involved contractors, NGOs, CBOs, WEO, Mtaa leaders, households and individual scavengers. In effect, it was logical to conclude that, the process of private sector participation had created employment, both wise formally and informally.

Thirdly, in regard to local resources mobilization strategies towards sustainable solid waste management, the study confirmed that, in this Ward: policies, laws and regulations prefer bottom-up approach to SWM and encourage the formation of various CSOs such as CBOs and NGOs; good planning of settlements, good distribution and good accessibility of waste collection points.

Fourthly, the study revealed that the quest for resources mobilization towards sustainable SWM faces a number of constraints. These included: inadequacy of local resource mobilization; poor coordination of a solid waste management system; inadequacy of private sector monitoring; lack of a solid waste management policy framework for involvement of the informal sector; lack of proper technology for supporting recycling activities; unavailability of land for disposal sites; polluters with poor purchasing power; and neglection of the wastes hierarchy principle in contracts design.

Lastly, regarding potentials for local resource mobilization towards sustainable solid waste management, the study of Hanna Nassif Ward before and after the advent of PPP in 1994, revealed that the quest for resources mobilization towards sustainable

SWM faced a number of potentials. These were: availability of labour-based technology; willingness to pay for solid waste management services; relatively favourable policy and legal environment; local political support; progressive compliance with the wastes hierarchy principle; and promotion of self-employment creation.

CHAPTER EIGHT

8.0 CROSS-CASE ANALYSIS AND SYNTHESIS OF THE FINDINGS ON LOCAL RESOURCE MOBILIZATION IN KINONDONI

8.1 Introduction

This chapter summarizes the key observations on local resources mobilization towards sustainable solid waste management as made in the preceding four case studies, namely: Kinondoni Municipality as a whole on one hand, and on the other, Sinza, Kawe and Hanna Nassif Wards. The aim was to compare and contrast the emerging constraints and potentials with respect to solid waste management processes in urban areas. It is organized into the following sub-sections: assessment of solid waste management services performance; actors involved in local resources mobilization towards sustainable solid waste management and their roles; and constraints and challenges facing local resources mobilization towards sustainable solid waste management.

8.2 Performance of Solid Waste Management Services in the Study Area

The cross-case analysis of the Kinondoni Municipality prior to 1994 on one hand, and on the other hand, Sinza, Kawe and Hanna Nassif Wards after 1994, reveals that public-private partnership (PPP) as a strategy of local resources mobilization towards sustainable solid waste management has similar and different impacts on these case studies as summarized below along various dimensions.

8.2.1 Effectiveness of Solid Waste Management Services in the Study Area

Effectiveness entails the principle that, the waste management model applied would lead to the safe removal of all wastes. The ratio of wastes collected versus wastes

generated is a good measure of this variable. If the ratio is 100% then we have the maximum possible effectiveness. The Table below compared and contrasted the effectiveness of Kawe, Sinza, and Hanna Nassif Wards on one hand, and on the other hand, the effectiveness of SWM in Kinondoni Municipality before PPP.

Table 8.1: Effectiveness of Solid Waste Management Services in Kinondoni

Parameter	**Case studies**			
	Kinondoni Municipality before PPP (1994)	**Kawe after PPP (Contractors and Informal CBOs)**	**Sinza after PPP (Informal CBOs)**	**Hanna Nassif after PPP (Formal NGO)**
Ratio of wastes collected versus wastes generated per day	10% out of 1480 tones	23.4% out of 162 tones	41.2% out of 105 tones	43.5% out of 74 tones

Source: Data for Sinza, Kawe and Hanna Nassif Computed from field (2008); and Data for Kinondoni Municipality before PPP extracted from KMC (2007)

From this Table, it was obvious that, effectiveness before the advent of PPP was very poor but was improved thereafter. This had been a result of emergency cleanup campaigns, privatization, community involvement, improved disposal sites management and development of wastes recycling. Thus, the performance of these innovativeness proved more effectiveness in enhancing solid waste management in Kinondoni Municipality than the previous conventional approaches.

On the other hand, the following differences within different modes of PPP were noted: Hanna Nassif which mostly served by formal NGO ranked the highest in the effectiveness of SWM services whereas Sinza which was mostly served by informal

CBOs ranked the second, and Kawe which was served by contractors and informal CBOs ranked the last one.

8.2.2 Waste Recycling, Composting and Dumping Ratios per Day

This study conducted a compliance audit with respect to the waste hierarchy principle across the four case studies. The quantitative findings from the field were indicated in Table 8.2.

Table 8.2: Waste Recycling, Composting and Dumping Ratios per Day

Parameter	**Case studies**			
	Kinondoni Municipality before PPP (1994)	**Kawe after PPP (Contractors and Informal CBOs)**	**Sinza after PPP (Informal CBOs)**	**Hanna Nassif after PPP (Formal NGO)**
Percentage of wastes recycled versus land-filled wastes	1.4% out of 2.3 tones	1.6% out of 2.6 tones	1.7% out of 1.8 tones	1.9% out of 1.4 tones
Percentage of wastes composted versus land-filled wastes	1.1% out of 1.7 tones	1.3% out of 2.1 tones	1.5% out of 1.6 tones	1.6% out of 1.2 tones

Source: Data for Sinza, Kawe and Hanna Nassif Computed from field (2008); and Data for Kinondoni Municipality before PPP extracted from KMC (2007)

Based on the demands of wastes hierarchy principle, it is clear that, the bigger the ratios the more the principle is complied with. Thus, revealed findings in these four case studies it was clear that the level of compliance with the wastes hierarchy principle had been progressively improving from 1994 to the present. Also, the findings revealed that, the best improvements had also been registered under formal NGOs in Hanna Nassif, which was followed by informal CBOs in Sinza and finally

informal CBOs and contractors in Kawe Ward.

On the other hand, from a qualitative perspective, compliance with the wastes hierarchy principle was checked by examining the modes of payments which were made to various solid waste management service providers in the three cases. It was concluded that, in all Wards i.e. Kawe, Sinza and Hanna Nassif, the service providers were paid per quantity of solid waste disposed off in bulk, regardless of the differences in these waste types, meant that, there was no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment. From these conclusions, it followed that, these practices were contrary to the demands of the wastes hierarchy principle.

8.2.3 Satisfaction Levels With Solid Waste Management Services

Various households' surveyed asked if they were satisfied for the service. In order to test this satisfaction the following question was posed by different surveyors across time: *If you receive SWM services what is your opinion of the service provided?* The possible alternative responses were: very satisfied; reasonably satisfying; needs improvement; don't know; and no service received. The Table below presented the results from the households' responses for four different surveys.

From this Table 8.3 it followed that Kawe, Sinza and Hanna Nassif Wards were similar in the sense that comparably they all had higher degrees of satisfaction. They were different from Kinondoni Municipality before PPP which had relatively lower degrees of satisfaction. This implied that the introduction of PPP has had a bigger impact on SWM services than it was the case before.

Table 8.3: Satisfaction Level of SWM services in Kinondoni Municipality

Degree of satisfaction of the areas covered	Case Studies			
	Kinondoni Municipality before PPP	**Kawe after PPP (Contractors and Informal CBOs)**	**Sinza after PPP (Informal CBOs)**	**Hanna Nassif after PPP (Formal NGO)**
Very satisfying	1.1% out of 120 households	5.2% out of 186 households	6.1% out of 410 households	7.3% out of 112 households
Reasonably satisfying	10.4% out of 120 households	35.5% out of 186 households	36.4% out of 410 households	37.6% out of 112 households
Needs improvement	22.9% out of 120 households	24% out of 186 households	24.9% out of 410 households	20.1% out of 112 households
Don't know	0.4% out of 120 households	1.9% out of 186 households	2.4% out of 410 households	3.6% out of 112 households
No service received	65.2% out of 120 households	33.4% out of 186 households	30.2% out of 410 households	31.4% out of 112 households
Total	100% households	100% households	100% households	100% households

Source: Data for Sinza, Kawe and Hanna Nassif Computed from field (2008); and Data for Kinondoni Municipality before PPP extracted from KMC (2007)

On the other hand, the following differences within different modes of PPP were noted: Hanna Nassif which mostly served by formal NGO ranked the highest in satisfaction whereas Sinza which was mostly served by informal CBOs ranked the second, and Kawe which was served by contractors and informal CBOs ranked the last one. These findings supported similar findings on the effectiveness of SWM services as discussed above under section 8.2.1.

8.3 Actors Involved in Local Resources Mobilization

The cross-case analysis of the Kinondoni Municipality prior to 1994 on one hand, and on the other hand, Sinza, Kawe and Hanna Nassif Wards after 1994, revealed

that PPP as a strategy of local resources mobilization toward sustainable solid waste management (SSWM) had increased the number of role players in solid waste management as shown in Table 8.4.

Table 8.4: Actors Involved in Local Resources Mobilization Towards SSWM

Types of actors present	Case Studies			
	Kinondoni Municipality before PPP	**Kawe after PPP (Contractors and informal CBOs)**	**Sinza after PPP (informal CBOs)**	**Hanna Nassif after PPP (formal NGO)**
City Council	Yes	Yes	Yes	Yes
Municipality Council	Yes	Yes	Yes	Yes
Contractors	No	Yes	Yes	Yes
NGOs	No	Yes	Yes	Yes
CBOs	No	Yes	Yes	Yes
WEO	No	Yes	Yes	Yes
Mtaa leaders	No	Yes	Yes	Yes
Housholds	Yes	Yes	Yes	Yes
Individuals	Yes	Yes	Yes	Yes

Source: Field work, 2008

Prior to 1994 only the City Council and Municipal Councils were providing solid waste management. But, according to the Table above, it was obvious that, other actors such as NGOs and CBOs had joined the struggle. In effect, it was logical to conclude that, the process of PPP had created employments, both formally and informally. At the same time it had promoted local participation in a way that respects human dignity. Furthermore, this synthesis showed that there were some similarities and differences between contractors and civil society organizations (CSOs). The differences were as follows: the local contractors paid tax to the government while CSOs did not. The local contractors owned the collection vehicles

and equipment for the service, while the majority of the CSOs hired collection vehicles. The similarities were as follows: both the local contractors and CSOs were required to collect wastes and transfer to the disposal sites. Both the local contractors and CSOs received their payments from the residents, and got paid for the Council duty such as sweeping the streets. There were no differences for the contract duration for both the contractors and the CSOs. It was found in the literature that the local contractors mostly served in the high income areas while CSOs mostly served in low income areas.

However, in a few areas some of the local contractors served in low income areas and some CSOs served in high income areas and both performed very well. This indicated that the arrangements of the company or the CSOs were very important in performing the job. For the sustainability of the private sector the Municipality could also consider this opportunity. Indeed, the payment which the contractors and CSOs received from the Municipality for streets sweeping provided an incentive to take on contract in low income areas as well high income areas to subsidize the running cost of the service provided.

8.4 Local Resource Mobilization Strategies For Sustainable SWM services

In light of the four case studies of Kinondoni Municipality before the emergency of PPP, Sinza, Kawe, and Hanna Nassif Wards, which had been covered in the preceding four chapters, this section sought to compare and contrast the emerging issues with respect to SWM services. To this end, the Table below used the key research variables to highlight the key similarities and differences that had arisen from the four case studies.

Table 8.5: Local Resource Mobilization Strategies in Three Kinondoni Wards

No.	Issue / Resource	Case Studies			
		Kinondoni Municipality before PPP	**Kawe after PPP (Contractors and Informal CBOs)**	**Hanna Nassif after PPP (Formal NGO)**	**Sinza after PPP (Informal CBOs)**
1.	Legal factors	Policies, laws and regulations preferred a top-down approach to SWM	Policies, laws and regulations prefer bottom-up approach to SWM and encourage the formation of various CSOs	Policies, laws and regulations prefer bottom-up approach to SWM and encourage the formation of various CSOs	Policies, laws and regulations prefer bottom-up approach to SWM and encourage the formation of various CSOs
2.	Organisational factors	Only Municipal Councils existed as formal organizations	Municipal councils as formal organizations, informal CBOs and contractors as formal organizations	Municipal councils, and contractors and NGOs as formal organizations	Municipal councils as formal organizations, and informal CBOs
3.	Spatial factors	Poor planning of settlements, poor distribution of waste collection points, and poor accessibility of waste collection points.	Good planning of settlements, good distribution of waste collection points, and good accessibility of waste collection points.	Better planning of settlements, better distribution of waste collection points, and better accessibility of waste collection points.	Best planning of settlements, best distribution of waste collection points, and best accessibility of waste collection points.
4.	Technological factors	Municipal council owned capital based technology but not labor-based technology	Local contractors own capital based technology and not labor-based technology, and the majority of the CSOs hire capital based technology and own labor-based technology	The majority of the CSOs hire capital based technology and own labor-based technology	The majority of the CSOs hire capital based technology and own labor-based technology
5.	Financial factors	Finances mainly acquired through public taxation.	Finances acquired through user fee collections; and subsidy based on public taxation.	Finances acquired through user fee collections; and subsidy based on public taxation.	Finances acquired through user fee collections; and subsidy based on public taxation.

Source: Own construct

In general, the study had shown that, the provision of Municipal services by Municipal Authorities alone could not be sustainable. It had been made clear that, until early 1990s the Dar es Salaam City Council collected less than 10% out of 1480 tones of the total refuse generated in the City per day, where, limited public-sector resources accounted for such low performance. However, a few years later, the promotion of participatory and partnership arrangements whereby local groups formulated strategies and prepared action plans to address critical environmental issues proved to be innovative ways of improving solid waste management in the City. The performance of these innovative ways had proved more effectiveness in enhancing solid waste management in Kinondoni Municipality than the previous conventional approaches. The changing trends in legal, organizational, institutional, spatial, technological and financial factors as well as the effectiveness and satisfaction levels reflected in Table 8.5 above were cases in support of this line of thinking.

8.5 Constraints Facing Local Resources Mobilization in SSWM services

The cross-case analysis of the case study of Kinondoni Municipality prior to 1994 on one hand, and on the other hand, the case studies of Sinza, Kawe and Hanna Nassif Wards after 1994, revealed that the quest for resources mobilization towards sustainable SWM faced a number of constraints and potentials. The evidence gathered from the four case studies was summarized below.

8.5.1 Inadequacy of Local Resource Mobilization

The adequacy of local resource mobilization faced the following constraints: lack of appropriate mechanism for collecting refuse charges, lack of funds to replace the

ageing fleet of vehicles and other equipments, inadequate funds for equipment maintenance and repair, and lack of a sustainable programme for establishment of local community-based organizations.

8.5.2 Poor Coordination of a Solid Waste Management System

The selection of technologies faced the following constraints: insufficient clear systems and technologies as applied for solid waste storage at households and primary collection, insufficient linkages between primary collection and transportation to secondary collection, and unspecified vehicle types for refuse collection systems in different areas.

8.5.3 Inadequacy of Private Sector Monitoring

Private sector participation faced the following constraints: poor community orientation and contractors over-reliance on the Municipal Council's enforcement of legislation, lack of contractor's operational experience in SWM and inappropriate equipment base, inadequate enforcement of the existing legislation/by-laws, and lack of adequate technical and financial capacity for both Municipal Council and contractors themselves.

8.5.4 Lack of an Appropriate Solid Waste Management Policy Framework

The involvement of local community groups and the informal sector faced the following constraints: unclear policy on involvement of the popular sector in SWM, remote awareness of local community involvement in SWM, and poor infrastructure to support local community involvement in SWM.

8.5.5 Inadequacy of Proper Technology for Supporting Recycling Activities

Waste recycling faced the following constraints: current SWM streams including recycling points were lacking policy to support the intended or planned strategies, recycling market was not yet identified, and recycling business was still in shambles and unstable, extra work load on the local community, and insufficient funds and lack of new technology.

8.5.6 Unavailability of Land for Disposal Sites

Management of disposal sites faced the following constraints: very minimal supports to acquire new and realistic sites, poor planning of the land use hence poor accessibility, irresponsibility of local communities, and persistent insufficiency of funds.

8.5.7 Polluters with Poor Purchasing Power

Another key challenge faced solid waste management was poor purchasing power on the part of the polluters, as a result of which the polluter pays principle could not be complied with across the whole community. In terms of economic power, the Kinondoni Municipality was comprised of different categories of residents. Most of the residents had no steady incomes. This meant that, contractors and other solid waste stakeholders who had decided to invest in this sector were unable to recover their invested money. Cost recovery was almost impossible, and as such entrepreneurs had no incentive to continue investing in the sector for quite sometime. In the long run, this constraint opened a door for solid waste services market failure.

8.5.8 Neglect of the Wastes Hierarchy Principle in Contracts Design

The study established that, in Kinondoni Municipality, the service providers were paid per quantity of solid waste disposed off in bulk, regardless of the differences in these waste types, meaning that, there was no incentive for them to encourage wastes minimization awareness campaigns, recycling initiatives, and wastes treatment. From these conclusions, it followed that, these practices were contrary to the demands of the wastes hierarchy principle. And such an abnormality was contrary to the principles of sustainable solid waste management.

8.6 Potentials for Local Resources Mobilization

8.6.1 Availability of Labour-Based Technology

The chief potential for local resource mobilisation was found to be the discretion in the choice of technology at the local level. At this level technology can be either labour-based or capital-based. In labour-based technology, human labour is mainly used for the operations. This is to say that, labuor-based technology aims at applying a labour-equipment mix that gives priority to labour, where, labour is supplemented with light equipment where necessary for reasons of quality or cost. It refers to the optimum and flexible use of local labour and locally available materials, skills and capacities, supported by the use of appropriate equipment, where technically and economically feasible.

On the other hand, in capital based technology, machinery is mainly used for operations. This is to say that, capital based technology aims at applying a labour-equipment mix that gives priority to equipment, where, equipment is supplemented with light labour where necessary for reasons of quality or cost.

In solid waste management, labour-based technology makes optimal use of local resources such as local material, and tools and light equipment that are locally produced. Thus, the Kinondoni Municipality could consider the use of labour-based technology in solid waste management instead of capital based technology. In effect, the choice of technology for solid waste management would influence employment parameters since it had a marked influence on the number and location of employment. Also, it could determine who was able to participate in a given solid waste management project.

8.6.2 Willingness to Pay for Solid Waste Management Services

The cross-case study showed that, middle and upper class families were the main generators of solid wastes. At the same time, it showed that, they were willing and capable to pay the user fees in accordance with the pay as you pollute principle. Thus, based on the market processes theory, in such segments of Kinondoni Municipality, entrepreneurs had an incentive to continue investing in solid waste management due to the prospects of profit making. That is to say, in these areas cost recovery is possible.

8.6.3 Relatively Favourable Policy and Legal Environment

Both at municipal and national levels, the study revealed that, the existing legal framework supports a bottom up approach to solid waste management. Specifically, in 2010, the Government of Tanzania launched the National Strategy for Growth and Reduction of Poverty (NSGRP II), popularly known as MKUKUTA in Kiswahili. This strategy included an operational target with respect to the effectiveness of solid

waste management, as measured by the ratio of collected wastes versus generated wastes in urban centers. According to the document, this ratio would increase from 47 per cent in 2008 to 85 percent in 2015. To this end, among other strategies, the Government of Tanzania was committed to do the following: sensitizing key actors on public-private partnership(PPP) policy (2009) and PPP Act (2010); developing a guiding document for PPP implementation including in infrastructure sectors; capacity development for institutions engaging in PPP; expanding space for public private dialogue; ensuring that PPP was also pro-poor through development of inclusive markets; making markets work for the poor; and putting in place investment incentives and systems to encourage investment by domestic private sector participation in all sectors.

8.6.4 Local Political Support

The researcher confirmed that, at the grass roots level *Mtaa* leaders had shown a positive attitude toward solid waste management through PPP. They were ready to help as and when they were consulted by solid waste management services providers. This spirit facilitates the establishment of horizontal and vertical linkages. In turn, going by the institutional economic theory, such linkages were important in the creation of synergetic relationships toward sustainable solid waste management.

8.6.5 Progressive Compliance with the Wastes Hierarchy Principle

According to the wastes hierarchy principle, in designing wastes management strategies, preference should be given to those methods which are more environmentally sound, where the preferences can be determined in terms of the

wastes hierarchy that entails a five-step order of priority in which wastes prevention has the highest priority being followed by re-use, recycling, recovery and waste disposal as the last option. The study confirmed that, between 1994 and 2008, there had been a progressive compliance with this principle, where the compliance was an indicator of the relative effectiveness of PPP when compared to conventional top-down approach to solid waste management. With improvements in wastes recycling and re-use rates the researcher was sure that, solid waste management would be more environmentally sustainable in the future.

8.6.6 Promotion of Self-Employment Creation

The researcher established that, prior to 1994 only the City Council and Municipal Councils were providing solid waste management services. But, according to the Table above, it was obvious that, other actors such as NGOs and CBOs had joined the struggle. In effect, it was logical to conclude that, the process of PPP had created employment, both formally and informally. At the same time bottom-up approach to solid waste management had promoted local participation in a way that respects human dignity by promoting self-actualisation amongst various solid waste stakeholders.

8.7 Summary

This chapter has discussed the following issues: solid waste management services performance; actors involved in local resources mobilization towards sustainable solid waste management and their roles; and the constraints and potentials facing local resources mobilization towards sustainable solid waste management. In effect,

the key similarities and differences of the four case studies as previously discussed in chapter four, five, six and seven have been brought together. Finally, relevant conclusions have been drawn. These conclusions have a number of policy implications which are discussed in the next chapter.

CHAPTER NINE

9.0 CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

9.1 Introduction

The principal objectives of this study were: to describe and analyse the performance of solid waste management in Kinondoni Municipality; to assess the motives and practical aspects of local resources mobilization towards solid waste management in Kinondoni Municipality; to identify the actors involved and their roles in local resources mobilization for solid waste management; to determine constraints and potentials of local resources mobilization towards sustainable solid waste management; and to make policy recommendations based on the research findings on local resources mobilization for sustainable solid waste management in urban areas. Against this background, this chapter closes the study by providing conclusions, policy implication issues, the related policy recommendations, and suggestions on future research prospects.

9.2 Conclusions

The study on local resource mobilization towards solid waste management in Kinondoni Municipality before and after the advent of PPP in 1994, revealed that, the following claims were true: for example various strategies of local resources mobilization had a huge potentiality toward the design of a framework that could meaningfully inform the development of an integrated and sustainable solid waste management in Kinondoni Municipality**.**

This claim was premised on a number of potentialities for local resource mobilisation which form the grounds on which the claim stood. In light of the above findings, it was clear that, the quest for resources mobilization towards sustainable solid waste management faced a number of potentials, namely: the availability of labour-based technology; willingness to pay for solid waste management services; relatively favourable policy and legal environment toward bottom-up approach to solid waste management; local political support; progressive compliance with the wastes hierarchy principle; and promotion of self-employment creation.

These adduced grounds were warranted by a number of similar solid waste management initiatives which were pursued through a bottom-up approach, as the literature review indicated. This review highlighted such solid waste management initiatives as, solid waste management through Cooperative Union in Rosario City, Argentina; solid waste management through CBOs in Qanater City near Cairo, Egypt; and solid waste management through PPP in Contonou City, Benin. In all these initiatives, it was evident that the above said potentialities were, in most cases, a sign of relativity in sustainable solid waste management services.

These warrants were backed by the past experience as could be supported from a number of theories which underpinned this study. For example, the institutional economic theory states that, acting in accordance with the institution is viewed as rational by those who share the institution. Thus, the legal, organizational and institutional frameworks that existed in Kinondoni Municipality were a reason for individual and collective rationality.

However, this conclusion could not permanently survive a number of objections if some key constraints on local resource mobilisation, as the study indicated, were not addressed properly. These constraints included: inadequacy of local resource mobilization skills; poor coordination of a solid waste management system; inadequacy of private sector monitoring; lack of a solid waste management policy framework for involvement of the informal sector; lack of proper technology for supporting recycling activities; unavailability of land for disposal sites; polluters with poor purchasing power; and neglection of the waste hierarchy principle in contracts design.

Failure to address properly these objections through policy, legal and administrative mechanisms, they would definitely curtail the above conclusion for obvious reasons. For example, if the fact that the polluter pays principle was not adhered too due to poor economic statuses of the polluters implied that, entrepreneurs would soon refrain from investing in solid waste management sector, since there was no profit incentive for them to invest there. This was how the market processes theory teached the researcher. On the other hand, if the Municipal Council failed to monitor contractors properly, the latter would soon shirk. As a result of poor monitoring and evaluation by the Municipal Council (principal), contractors (agents) would leave streets full of wastes. This was what the principal-agent theory teached the researcher.

9.3 Policy Implication Issues

In light of the above mentioned research findings and conclusion, the following were issues for policy recommendations: policy framework for local resources

mobilization, networking and mobilisation of local actors, supplementing conventional approach in municipal service provision, solid waste management cost recovery, and compliance with the wastes hierarchy principle in contracts design. Clarifications on each of the policy issue were given below.

9.3.1 Policy Framework for Local Resources Mobilization

The study found that, there was no policy for local resource mobilisation toward solid waste management in Kinondoni Municipality. The absence of such a policy was a constraint on local resource mobilisation toward solid waste management. In principle, a policy is a statement, verbal, written or implied, of those principles and rules that are set by a collective action institution as guidelines to the institution's actions. It is a predetermined course of action established as a guide towards accepted objectives of the institution. Accordingly, a policy on local resource mobilization toward solid waste management would enable the various stakeholders to rely properly to the national objectives with respect to solid waste management. Thus, it was a high time for Tanzania to enact a policy for SWM.

9.3.2 Networking and Mobilisation of Local Actors

The researcher established that, although the actors on solid waste management sector had tremendously increased between 1994 and 2008, they were still not well networked, both vertically and horizontally. However, according to this study, it was found that, stakeholders' participation in local resources mobilization towards sustainable SWM in urban areas in Tanzania was a recent phenomenon. In the past, that was prior to 1994, solid waste collection projects were planned, implemented

and operated in a top-down approach by the state organs which finally became unable to run these activities effectively. The study further revealed that, after the advent of PPP in 1994, a bottom-up approach was introduced, as a result of which, a broad stakeholders' participation emerged and tremendous improvements were registered in solid waste management. Thus, there was a need to create a policy that puts more emphasis on local community networking and mobilisation toward a fuller participation in local resource mobilisation towards sustainable SWM.

9.3.3 Supplementing Conventional Approach with Bottom up Approach

The study found that, the conventional approach to solid waste management showed some disabilities which could be traced back through the following factors: inability of the local authorities to pick up all the waste, lack of financial resources, lack of skill, increasing throw-away mentality, improper disposal facilities, lack of proper legislation, improper organizational structure of the waste management authority, and the lack of public participation.

On the other hand, it was revealed that the introduction of PPP after 1994 brought about tremendous improvements in solid waste performance, especially in those areas where the economic status of the residents favours the polluter pays principle. Under PPP, the use of available labour based technology and tapping into actor's knowledge and skills promoted local resources mobilization towards sustainable solid waste management. Thus, there was a need to produce a policy which would ensure that the convectional system of solid waste management was supplemented by the bottom-up approach.

9.3.4 Solid Waste Management Cost Recovery

This study found that, in most of the areas where solid waste management services had been privatised, almost all entrepreneurs had no incentive of continuing to invest in the sector due to lack of investment cost recovery and profit making. Apparently, this problem based on the fact that some of the residents could not afford to comply with the polluter pays principle. There was a need to promote resources independence through a focused policy framework. Such a policy would seek to promote self-reliance in terms of an empowerment program that entails a well-balanced capital formation structure, coordination in the mobilization and use of resources in the domestic market, and organic development from a simple to complex structure.

9.3.5 Compliance with the Waste Hierarchy Principle in Contracts Design

Also, the study found that, the contractors were paid per quantity of solid wastes disposed off in bulk, regardless of the differences in the different types of wastes, namely: biodegradable, recyclable, reusable and inert wastes. This meant that, there was no incentive for the contractors to encourage wastes minimization awareness campaigns, recycling initiatives, and waste treatment. From these conclusions, it was obvious that, these practices were contrary to the demands of the wastes hierarchy principle. Such abnormality was contrary to the principles of sustainable solid waste management. Thus, there was a need to put in place a policy, according to which, the collected volumes of biodegradable, recyclable, reusable and inert wastes are paid at different rates in such a way that collected biodegradable, recyclable, reusable are paid at lower rates than the rate at which inert wastes are paid.

9.4 Policy Recommendations

In light of the above mentioned research findings, conclusion and issues for policy recommendations, key policy recommendations were hereby given on the following issues: policy framework for local resources mobilization, networking and mobilisation of local actors, supplementing conventional approach in municipal service provision, solid waste management cost recovery, and compliance with the waste hierarchy principle in contracts design. Clarifications on each of the policy recommendation were given below.

9.4.1 Institutionalization of Policy Framework

The study established that, there were weaknesses in SWM laws, by-laws and contracts enforcement. Thus, it was recommended that, in order to succeed in SWM our related norms, rules, regulations and by-laws must be institutionalised, and hence, meaningful, effective, simple, and brief. It was important to note that all current versions were almost passive hence the need to review the contents with a view to reducing them and focusing on priority concerns of key actors. This study proposed that it was high time to popularize these by-laws; however, this had to be done after translating all of them into the national language, that is Kiswahili and making them available at the local communities.

9.4.2 Mobilising Grass Roots Actors Towards Local Resources Mobilization

The study established that, deliberate and effective involvement of grass roots institutions, that is from designated solid waste management (Ten cell leader up to Ward Development Committee leaders), helps to address many operational

problems including streamlining dispute resolutions at Ward, *Mtaa* and Ten Cell levels by directly involving private operators and service users as well as empowering or giving key actors the mandate they deserve. However, it was observed that, the prevailing procedures and practice did not give enough powers to the local community leaders either to select efficient private operators or resolve conflicts between service users and private operators. Thus, it was recommended that a policy would be put in place so as to facilitate the formation, coordination and empowerment of local institutions towards solid waste management.

9.4.3 Supplementing Conventional Approach With Bottom up Approach

The study established that, the top-down approach to solid waste management had a number of drawbacks which could be remedied or solved through a bottom-up approach. It was also confirmed that, the bottom-up approach to solid waste management could not solve all problems relating to waste management. In other words, the two approaches were complimentary to each other. In this regard, the following policy was recommended: the municipality would not intervene in solid waste management, if the lower entities alone could accomplish that task unless it is otherwise.

9.4.4 Establishment of an Efficient System of Cost Recovery

The study established that, the polluter pays principle was not fully adhered too due to fluctuating income levels amongst the residents who were supposed to pay for the pollution they cause. As a result, the entrepreneurs in the waste management sector did not always gain a profit incentive for them to stay in that activity. This was the

case because, in most cases, it was impossible for them to recover their investment cost. From these observations, one conclusion followed that: although the sustainability of waste management systems requires the establishment of an effective and efficient cost recovery framework, this condition did not hold in the study area.

Thus, it was recommended that, the following policy should be formulated so as to promote efficient cost recovery: fees that reflect affordability and related consumption that leads to waste should be developed. For households, this typically meant setting the tariff based on one of the following: size of property, category of neighborhood (by income) and related property tax, water consumption billings, and electricity consumption billings. In order to discourage excessive waste generation, waste generators that regularly produce large quantities should be charged based on the size of their containers.

The policy should also make it necessary to collect money through a wide variety of sources. These sources of revenues could be formalized: penalties for littering, clandestine dumping and other solid waste infractions; license fees from collectors/haulers of special categories of solid waste (e.g., construction/demolition debris, medical waste, bulky waste); share of gross revenues from collectors/haulers having a franchise (i.e., zonal monopoly) for waste collection; revenues from sale of recyclables (e.g., secondary materials), recovered resources (e.g., compost), and energy (e.g., steam, electricity) from treatment and disposal facilities; revenues from sale of avoided or reduced emissions (e.g., methane expressed as carbon dioxide

equivalent green house gas); tipping fees from individuals, private establishments, and waste haulers at transfer, treatment, and disposal facilities; and landfill or general environmental taxes.

9.4.5 Compliance with the Wastes Hierarchy Principle in Contracts Design

The study established that, the process of contract design did not comply with the wastes hierarchy principle, which demands that organic wastes should be treated instead of being sent to the landfill. This happens because; contractors were paid based on the weight of the waste they transport regardless of the differences in organic and inert types of wastes. Thus, it was recommended that, the following policy should be put in place: contractors remuneration, in case a single contractor who was collecting, transporting and managing the landfill, had to reflect the hierarchy principle in accordance with the following formula: the price of transport (per tone) of recycling material and/or organic material to the treatment facilities would be greater than the price of transport (per tone) of inert material to the landfill.

9.5 Areas for Further Research

This study had also identified two areas for further research in order to complement findings from the local resources mobilization. The following questions would need to be addressed sooner than later.

i) What kind of legal actions and framework should municipalities/towns depend on to ensure smooth local resources mobilization towards sustainable solid waste management compliance in developing countries?

ii) What level of self-employment creation would involve each household/local resident in sorting solid waste at source before they dispose them, pack them into bags, or throw them into collection pits or dumpsites, in developing countries.

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APPENDECES

Appendix 1: Rapid Settlement (Mitaa) Appraisal (Survey) in Kinondoni Municipal in Dar es salaam- 2008

1. Informal Settlements Typology

Tools used for settlements typology were two, that is, physical observations and checklist questions as per the study variables and indicators for analyzing informal settlements. Typology for selection of in-depth case studies was as follows:

1.1 Solid Waste Management Services System Existing

Description	Yardstick	Score points
On site collection exist	Routine collection	8
Informal collection	Occasional collection	3
Crude dumping	No collection system at all	0

Source: Own construct, 2007

1.2 Presence of Institutions Dealing with SWC

Community groups available (at grass roots) and others(annotate them) e.g CBOs; NGOs; & others(list them)	• Formal score points:7 • Informal score points:2 • None score points: 0

Source**:** Modified from Kyessi, 1999

1.3 Presence (PPP) Involved in SWM at Ward Levels

• PPP services plus Municipal • Sole PPP • PPP plus CBOs/NGOs • PPP plus others(list them)	• Available PPP+KMC score points:6 • Sole PPP score points 4 • PPP +CBOs/NGOs score points 3 • Occassional (all the above) points 2 • PPP+ others score point 1 • None at all score points: 0

Source: Own construct, 2007

1.4 Presence of Permanent Disposal Dumpsites

Types of SWC dumping	Score points
Official permanent dumpsites	Score points:5
Temporary dumpsites	Score points:2
Crude dumpsite	Score points: 0

Source: Own construct, 2007

1.5 State of the Environmental Surroundings/Neighborhood

Stages	Clarification	Score points
The infancy Stage	Relatively clean environment with small solid waste piles	Score point:4
The booming stage	Scattered piles of solid waste accumulation	Score points:2
The saturation stage	Visible solid waste accumulation piles and filthy smell	Score points:1

Source: Modified from Kyessi, 1999

1.6 Economic Status of Mitaa/Settlements

Main indicators	Level of incomes
• Status of settlement based on presence of economic activities • Status of settlement based on Municipal services provision • Status of settlement based on types of houses & all related services	• Mixed income score points: 3 • Medium income score points: 2 • Low income score point: 1

Source: Modified from Kyessi, 1999

Key:

Low Income: Less than one U$D per day

Medium Income: More than one but more than five U$D per day.

Mixed Income: Five U$D and above per day.

1.7 Physical Development and Types of Settlements

Main indicators and score points
Presence of planned houses/roads etc: score points: 2
Presence of mixed houses(planned & unplanned houses: score point: 1
Presence of unplanned settlement/houses: score point: 0

Source: Modified from Kyessi, 1999

1.8 Level of Economic & Social Development

Main indicators	Level of assessment
Accessable roads/water/schools/electricity etc	Score points: 2
Mixiture of the above infrastructure/services	Score point: 1
Poor/no roads/service water etc	Score point: 0

Source: Own construct, 2007

1.9 Selection Table

Names of urban Ward	Names of Mitaa	Index numbers &Weighing matrix								
		1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	Total score
1. Makurumla	1. Kimamba	3	2	3	2	1	2	1	1	15
	2. Mianzini	3	2	3	2	1	1	1	1	14
	3. Kwa Jogoo	3	2	3	2	1	1	1	1	14
	4. Mburahati Kwa Jogoo	3	2	3	2	1	1	1	1	14
	5. Kilimahewa	3	2	3	2	1	1	1	1	14
	6. Sisi Kwa Sisi	3	2	3	2	1	2	1	1	15
	7. Kagera Mikoroshoni	3	2	3	2	4	1	1	1	17
	8. Kagera	3	2	3	2	4	2	1	1	18
	Grand total	24	16	24	16	14	11	8	8	121
2. Ndugumbi	1 Ndugumbi Vigaeni	8	2	3	4	2	1	1	1	22
	2. Makanya	8	2	3	4	2	1	1	1	22
	3. Kagera Mikoroshoni	8	2	3	4	2	1	1	1	22
	4. Mpakani	8	2	3	4	2	1	1	1	22
	Grand total	32	8	12	16	8	4	4	4	88

Names of urban Ward	Names of Mitaa	Index numbers &Weighing matrix								
		1.1	**1.2**	**1.3**	**1.4**	**1.5**	**1.6**	**1.7**	**1.8**	**Total score**
	2. Pakacha	3	2	2	1	2	1	1	1	13
	3. Kwa Pakacha	3	2	2	1	1	1	1	1	12
	4. Muharitani	3	2	0	1	1	1	1	1	10
	5. Mtogole	3	2	0	1	2	2	1	1	12
	6. Mkunduge	3	2	0	1	1	1	1	1	10
	7. Kwa Tumbo	3	2	0	1	1	1	1	1	10
	Grand total	26	19	6	8	10	9	8	7	93
4. Mwananyamala	1. Mwinjuma	3	2	6	2	1	1	1	1	17
	2. Kambangwa	8	2	6	2	2	2	1	1	24
	3. Msisiri “B”	3	2	6	2	2	2	1	1	20
	4. Msisiri”A”	3	7	6	2	2	2	1	1	24
	5. Bwawani	3	7	6	2	2	2	1	1	29
	6. Kwa Kopa	8	7	6	2	1	2	1	1	23
	7. Msisiri”B”Inst. Pop	3	7	6	2	2	2	1	1	24
	Grand total	31	34	42	14	12	13	7	7	161
5. Msasani	1. Makangira	8	2	6	2	4	3	1	1	27
	2. Mikoroshini	8	2	6	0	1	2	1	1	21
	3. Bonde la Mpunga	8	2	6	0	1	1	1	1	22
	4. Masaki	8	2	6	2	4	3	2	2	29
	5. OysterBay	8	2	6	2	4	3	2	2	29
	Grand total	40	10	30	6	14	12	7	7	128

Selection Table (continues)

Names of urban Ward	Names of Mitaa	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	Total score
6. Kinondoni	1. Kinondoni Mjini	8	2	6	2	4	3	2	2	29
	2. Kinondoni Shamba	8	2	6	0	1	2	1	1	21
	3. Kumbukumbu	8	2	6	0	1	1	1	1	20
	4. Ada Etate	8	2	6	2	4	3	2	2	29
	Grand total	32	8	24	4	10	9	6	6	99
7. Mzimuni	1. Makumbusho	8	2	3	2	2	1	1	1	20
	2. Idirisa	3	2	3	2	2	1	1	1	15
	3. Mwinyi Mkuu	3	2	3	2	2	1	1	1	15
	4. Mtambani	3	2	3	2	2	1	1	1	15
	Grand total	17	8	12	8	8	4	4	4	65
8. Kigogo	1. Kigogo Mbuyuni	3	0	0	5	1	2	1	0	12
	2. Kigogo Kati	3	0	0	5	1	2	1	0	12
	3. Kigogo Mkwajuni	3	0	0	5	1	1	1	0	11
	Grand total	9	0	0	15	3	5	3	0	35
9. Mabibo	1. Mabibo	8	2	3	2	2	3	1	1	22
	2. Jitegemee	8	2	3	2	2	3	1	1	22
	3. Kanuni	3	2	3	2	2	3	1	1	17
	4.Azimio	8	2	3	2	2	3	1	1	22
	5. Matokeo	3	2	3	2	2	3	1	1	17
	Grand total	30	10	15	10	10	15	5	5	100
10. Manzese	1. Kilimani	8	2	6	2	2	2	1	1	24
	2. Mvuleni	8	2	6	2	2	2	1	1	24
	3. Mnazi Mmja	3	2	6	2	2	2	1	1	19
	4. Uzuri	3	2	6	2	2	2	1	1	19
	5. Muungano	8	2	6	2	2	2	1	1	24
	6. Midizini	3	2	6	2	2	2	1	1	19
	Grand total	33	12	36	12	12	12	6	6	129
11. Ubungo	1. Ubungo N.H.C	3	2	3	2	2	2	1	2	17
	2. Ubungo Kisiwani	3	2	3	2	2	2	1	0	15
	3. Ubungo Kibo	8	2	3	2	2	2	1	2	22
	4. Ubungo Msewe	3	2	3	2	2	2	1	0	15
	5. Chuo Kikuu	8	2	3	2	2	2	1	2	22
	6. Chuo Kikuu Inst. Pop.	8	2	3	2	2	2	1	2	22
	Grand total	33	12	18	12	12	12	6	8	113

Selection Table (continues)

Names of urban Ward	Names of Mitaa	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	Total score
12. Kawe	1. Mzimuni	8	7	6	2	1	1	1	1	27
	2. Ukwamani	8	7	6	2	1	1	1	1	27
	3. Mbezi Juu	8	2	6	4	3	2	1	1	27
	4. Makongo	8	2	6	4	3	1	1	1	26
	5. Mlalakuwa	8	2	6	2	3	1	1	1	24
	6. Changanyikeni-Mbuyuni	8	2	6	2	2	1	1	2	24
	7.Changanyikeni-Kati	8	2	6	2	2	1	1	2	24
	8. Changanyikeni	8	2	6	2	2	1	1	2	24
	9. Lugalo	8	2	6	4	3	1	1	2	27
	10. Mbezi Juu Inst.Pop.	8	2	6	2	3	2	1	1	25
	11. Changanyikeni Inst.Pop.	8	2	6	2	1	1	1	2	23
	Grand total	88	32	66	28	24	13	11	16	278
13. Makuburi	1. Mwongozo	3	2	2	2	1	1	1	1	13
	2. Kibangu	3	2	2	2	1	1	1	1	13
	3. Makoka	3	2	2	2	1	1	1	1	13
	Grand total	9	6	6	6	3	3	3	3	39
14. Mburahati	1. Mburahati Barafu	3	2	2	2	1	1	1	1	13
	2. Kisiwani	3	2	2	2	1	1	1	1	13
	3. Mburahati N.H.C	3	2	2	2	1	1	1	1	13
	Grand total	9	6	6	6	3	3	3	3	39
15 Makumbusho	1. Kisiwani	8	2	2	2	2	1	1	2	20
	2. Mchangani	8	2	2	2	2	2	1	2	21
	3. Minazini	8	2	2	2	2	2	1	2	21
	4. Makumbusho	8	2	2	2	2	2	2	2	22
	5. Mbuyuni	8	2	2	2	2	2	1	2	21
	Grand total	40	10	10	10	10	9	6	10	105
16. Sinza	1. Sinza”C”	8	7	6	2	4	3	2	2	34
	2. Sinza “A”	8	7	6	2	4	3	2	2	34
	3. Sinza “B”	8	7	6	2	4	3	2	2	34
	4. Sinza Block”E”	8	7	6	2	4	3	1	2	33
	5. Sinza Block”D”	8	7	6	2	4	3	1	2	33
	Grand total	40	35	30	10	20	15	8	10	168
17. Kijitonyama	1. Bwawani	3	7	2	2	2	2	1	2	21
	2. Ali-Maua”A”	3	7	2	2	2	2	0	2	20
	3.Ali-Maua”B”	3	7	2	2	2	2	1	2	21
	4. Kijitonyama	8	7	2	2	2	3	1	2	27
	5. Mpakani”A”	8	7	2	2	2	3	1	2	30
	6. Mpakani”B”	8	7	2	2	2	3	1	2	30
	7. Mwenge	8	7	2	2	2	3	1	2	28
	Grand total	38	49	14	14	14	18	6	14	167

Selection Table (continues)

Names of urban Ward	Names of Mitaa	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	Total score
18. Kimara	1. Kimara Matangini	3	2	2	2	2	2	0	1	14
	2. King'ongo	3	2	2	2	2	2	0	1	14
	3. Kimara-Baruti	3	2	2	2	2	2	0	1	14
	4. Baruti	3	2	2	2	2	2	0	1	14
	5. Mavurunza	3	2	2	2	2	2	0	1	14
	6. Kimara "B"	3	2	2	2	2	2	0	1	14
	Grand total	31	12	12	12	12	12	0	6	84
19. Mikocheni	1. Regent Estate	8	2	2	2	2	3	1	1	21
	2. Mikocheni"A"	8	2	2	2	2	3	1	1	21
	3. Mikocheni"B"	8	2	2	2	2	3	1	1	21
	4. Regent Estate Inst.Pop.	8	2	2	2	2	3	1	1	21
	5. Mikocheni "B" Inst. Pop	8	2	2	2	2	3	1	1	21
	Grand total	40	10	10	10	10	15	5	5	105
20. Hananasif	1. Hananasif	8	7	12	12	8	9	10	10	76
	2. Mkunguni	8	7	8	8	8	6	7	6	58
	3. Kisutu	8	7	6	6	6	4	6	7	50
	Grand total	24	21	26	26	22	19	23	23	184

Source: Field work, 2007

Appendix 2.1: KMC-2008 (List of Urban Wards Contractors) and their Capacity

S/N	Name of Wards	Mitaa/Service Area	Code no.	Contractors Name	No. of Trucks (6-8m^3)
1.	Magomeni	Makuti "A"& "B", Idirisa, Dosi, Suna	1	No Contractor	NIL
2.	Ndugumbi	The Whole Ward	2	Sweet corner Envirocare	1
3.	Mzimuni	Mtambani,Makumbusho, Idirisa Mwinyimkuu	3	Sweet corner Envirocare	2
4.	Manzese	Uzuri, Muungano, Mvuleni &Midizini	4 A	No Contractor	Nil
		Kilimani	4B	No Contractor	Nil
		Mnazi Mmoja	4C	Kurasini Construction Co Ltd	2
5.	Sinza	Sinza Block "A" &" B"	5A	Kimangele Enterprises	2
		Sinza Block "C"	5B	No Contractor	Nil
		Sinza Block" D" &"E"	5C	No Contractor	Nil
6.	Makurumla	Kwajogoo,Kilimahewa & Mianzini	6A	TTM Group	2
		Sisi kwa sisi	6B	SIMAYE Group	1
		Kimamba & Kagera	6C	No Contractor	Nil
7.	Ubungo	Ubungo NHC	7A	No Contractor	Nil
		Ubungo Kisiwani	7B	Umoja wa Wazee Kinondoni	1
		Msewe,Kibo & Chuo Kikuu	7C	No Contractor	Nil
8.	Kimara	Kimara Matangini, Kimara" B", Kimara Baruti, & Mavurunza	8A	NIMA Enterprises	3
		Baruti	8B	JASIKA Enterprises	1
9.	Kigogo	The Whole Ward	9	No Contractor	Nil
10.	Mabibo	Matokeo & Kanuni	10A	No Contractor	Nil
		Mabibo & Jitegemee	10B	Tropical Eng. Ser.& Co.	2
11.	Makuburi	Kibangu,Makoka &Mwongozo	11	Tropical Eng.Ser. & Co	2
12.	Kinondoni	The Whole Ward	12	Kinondoni Enviro (KENS)	2

S/N	Name of Wards	Mitaa/Service Area	Code no.	Contractors Name	No. of Trucks (6-8m^3)
13.	Hanna-Nissif	The Whole Ward	13ªA 13B	Kisutu Women Trust Fund (KIWODET) Mazingira Group	3 1
14.	Msasani	Bonde la Mpunga,Makangira & Mikoroshini	14A	CLN Electrical & General Construction Ltd	1
		Osterbay &Masaki	14B	1994 Environmental Protection (Mazingira)	3
15.	Mikocheni	Regent Estate, Mikocheni "A"&"B"	15	Lyoto and Company Ltd	3
16.	Tandale	The Whole Ward	16	No Contractor	Nil
17.	Kijitonyama	The Whole Ward	17A	No Contractor	Nil
		The Whole Ward	17B	No Contractor	Nil
		The Whole Ward	17C	No Contractor	Nil
18.	Mwananyamala	Kambangwa & Mwinyijuma	18A	Kinondoni Environmentalists (KENS)	1
		Msisiri "A" &"B"	18B	No Contractor	Nil
		Bwawani	18C	No Contractor	Nil
		Kwa Kopa	18D	No Contractor	Nil
19.	Makumbusho	The Whole Ward	19	Mazingira Makumbusho Group	4
20.	Kawe	Ukwamani	20A	No Contractor	Nil
		Mzimuni	20B	No Contractor	Nil
		Mbezi Chini	20C	No Contractor	Nil
		Mbezi Juu	20D	IYHANE Sanitary & Supplies	1
		Mlalakuwa	20E	Mkunguni Group "2003"	1
		Makongo	20F	No Contractor	Nil

Source: Kinondoni Municipality, 2008

Appendix 2.2: Estimates of Acquired Local Materials in Quantity and Values from Individual Scavengers from year 2004 to 2008

Year	Materials	Tons	%	Value in TZS1,000	%
2004-2008	Containers	550,000	9.6	383,250	8.0
2004-2008	Other Plastics	1,390,000	24.3	754,700	15.8
2004-2008	Plastic Bottles	2,257,000	39.4	1,416,450	29.6
2004-2008	Plastic Buckets	1,530,000	26.7	2,227,300	46.6
	Sub-Grand Total	5,727,000	100.0	4,781,700	100.0
2004	All materials	920,000	16.1	168,400	3.5
2005	All materials	857,000	15.0	155,800	3.3
2006	All materials	1,130,000	19.7	188,800	3.9
2007	All materials	1,290,000	22.5	197,300	4.1
2008	All materials	1,530,000	26.7	4,071,400	85.1
	Sub-Grand Total	5,727,000	100.0	4,781,700	100.0

Source: Field work, 2008/09

Appendix 2.3: Estimates of Acquired Local Materials in Quantity and Values from Agents in year 2004 to 2008

Year	Materials	Tons	%	Value in TZS.Millions	In % age
2004-2008	Assorted waste	7,197	0.1	413,650	0.0
2004-2008	Billets	739,540	11.6	1,964,438	11.5
2004-2008	Brown Waste	9,563	0.2	16,914	0.1
2004-2008	Codri Roll	729,640	11.5	182,818	10.7
2004-2008	Hot roll Coils	720,595	11.3	188,758	11.0
2004-2008	Kart waste	8,057	0.1	1,140	0.1
2004-2008	Steel Scraps	4,134,905	65.0	1,138,731	66.5
2004-2008	White waste	7,546	0.1	1,991	0.1
	Sub-Grand Total	6,357,043	100.0	1,711,990	100.0
2004	All materials	1,271,927	20.0	200,883	11.7
2005	All materials	1,537,210	24.2	284,527	16.6
2006	All materials	1,687,415	26.5	331,295	19.4
2007	All materials	1,012,638	15.9	488,024	28.5
2008	All materials	847,853	13.3	407,259	23.8
	Sub-Grand Total	6,357,043	100.0	1,711,990	100.0

Source: Field work, 2008/09

Appendix 3.1: Trends of Estimates of SW Generated & Actual Amount Collected in Tones per day in Terms of Wards in KMC from 2000-2007

S/N	Name of Wards	Estimates of SW generated per day	Actual amount of SW collected per day	SW collected per day in percentage wise	Remarks/reasons for rise & falls in SW collections per day
1.	Tandale	95.0	38.0	40.0%	Trailer available
2.	Msasani	95.0	74.4	78.3%	Trailer available
3.	Kawe	162.0	38.0	23.4%	Trailer available
4.	Kunduchi	88.0	30.0	34.0%	Other means
5.	Mwananyamala	114.0	18.0	15.7%	Trailer available
6.	Kinondoni	55.0	46.0	23.6%	Trailer available
7.	Magomeni	36.0	16.3	45.3%	Trailer available
8.	Ndugumbi	38.0	32.0	84.2%	Trailer available
9.	Makurumla	114.0	55.0	48.2%	Trailer available
10.	Mabibo	85.0	53.2	62.6%	Trailer available
11.	Manzese	131.4	52.0	30.9%	Trailer available
12.	Ubungo	85.0	38.0	44.7%	Trailer available
13.	Mzimuni	51.4	46.3	90.0%	Trailer available
14.	Sinza	105.0	48.6	46.3%	Trailer available
15.	Mburahati	101.0	27.8	39.4%	Trailer available
16.	Kigogo	32.4	21.0	41.7%	Within di/site
17.	Makuburi	42.0	27.0	64.3%	Other means
18.	Hannanasifu	74.0	45.0	60.8%	Trailer available
19.	Mikocheni	84.0	52.0	61.8%	Other means
20.	Kijitonyama	101.0	39.8	38.3%	Trailer available
21.	Makumbusho	108.5	25.8	59.4%	Trailer available
22.	Kimara	101.0	40.0	38.6%	Other means
23.	Bunju	32.4	13.0	40.1%	Other means
24.	Mbweni	11.4	5.5	40.7%	Other means
25.	Kibamba	25.0	9.8	39.2%	Other means
26.	Mbezi	30.5	12.0	39.4%	Other means
27.	Goba	38.0	15.0	39.5%	Other means
28.	Total	2,026	1,155	57.0%	Almost collection

Key: Within di/site= within disposal site

Source: Field work, 2008

Appendix 3.2: KMC Trends of Solid Waste Generated; Collected; & Disposed at the Official Dumpsites Sites in Tones per Year from 2000-2007

Year of generation & collections	Estimates of SW generated in tons per year	Municipal & Franchisee collections in tons per year	SW collected in tons per year	Total SW collections per year	SW collections percentage wise	Remarks/reasons for rise and falls of collections
2000	312,440	Municipal	27,826	41,628	13%	• Leadership change • Political interference
		Franchisee	11,802			
2001	335,800	Municipal	35,321	55,521	17%	• Leadership change • Political interference
		Franchisee	18,199			
2002	361,350	Municipal	51,726	88,315	25%	• Some new investments in place
		Franchisee	34,587			
2003	388,360	Municipal	54,893	98,104	25%	• More experience gained • Municipal council got strong
		Franchisee	41,208			
2004	594,950	Municipal	54,738	96,494	16%	• Invested resources deteriorated
		Franchisee	39,752			
2005	639,480	Municipal	48,944	87,512	14%	• More recycling activities in place • Some franchisee quit
		Franchisee	38,568			
2006	687,660	Municipal	47,135	81,060	12%	• Municipal service discouragement
		Franchisee	33,925			
2007	739,490	Municipal	322,470	421,575	57%	• More investment pulled in for improving the services including 27 new 15 tons trailers
		Franchisee	89,105			

Source: Field work, 2008

Appendix 3.3: Waste generation and collection in Dar es Salaam City from 1993 to 2007

Years	Generation per day in tones	Collection per day in tones	% of collected wastes
1993	1480	148	10
1994	1500	185	12
1995	1620	230	14
1996	1772	260	15
1997	1850	300	16
1998	1980	380	20
1999	2144	454	21
2000	2200	354	16
2001	2130	476	21
2002	2400	719	30
2003	2600	792	30
2004	3091	849	27
2005	3156	900	28
2006	1554	404	26
2007	3350	906	37

Source: Field work, 2008

Appendix 4.1: Contracts between KMC and Private Contractors

(a). Contract document:

KINONDONI MUNICIPAL COUNCIL

CONTRACT NO.....

AN AGREEMENT FOR REFUSE COLLECTION AND DISPOSAL

THIS CONTRACT is made this ……. day of ……. **BETWEEN** the Kinondoni Municipal Council of P.O. Box 31902 Dar es Salaam (hereinafter called "the Authority") of the one part.

AND

M/S …….of P.O. Box ……Dar es Salaam (hereinafter called "The Contractor") of other part:

WHEREAS:

1. The Authority is desirous to privatize cleansing services, Refuse collection and disposal within the Kinondoni Municipality;

AND WHEREAS

2. The contractor has tendered bids to perform such said services in areas specified under Appendix ‘B’ on the terms and conditions contained in this Agreement;

WHEREFORE

3. The Authority has agreed to engage the contractor to carry out the services stipulated in the contract.

NOW THEREFORE THE PARTIES have agreed as follows:-

1. Interpretation:

   In this contract, words and expressions shall have the same meaning as are assigned to them except where the context otherwise requires.

2. The following documents shall form and are to be read and construed as part of the contract for the performance of services by the contractor.

   (a) Condition of the contract

   (b) Service specifications- Appendix ‘A’

   (c) Schedule of services

   (d) Vehicles and equipments for performing services

   (e) Area of operation – Appendix ‘B’

3. The contractor undertakes to diligently and promptly perform the services in accordance with the provision of contract and to the satisfaction of the Authority and in particular shall perform the following obligations:-

   i. To collect, transport and dispose or dump solid waste into approved sites.

ii. To cleanse and remove sand from all streets within its area of operation

iii. To clean open drains

iv. To remove dead animals from the relevant streets and roads, and

v. To collect refuse collection charges directly from the residents or trade facilities, in accordance with the specified rate chargeable as indicated in Schedules I – V of the Kinondoni Municipal Commission (Waste Management and Refuse Collection) By-laws, 2000

4. In consideration of and in reciprocal for the contractor's undertaking herein, the Authority authorizes the contractor to collect and appropriate to itself the Refuse Collection charges, in a manner and in respect of the areas set out in the contract.

5. The contract shall be deemed to have commenced on the …… day of May 2003 and shall remain in force for a period of two years from the commencement date, unless sooner terminated and is renewable for a further term in accordance with terms and conditions to be determined by the parties.

IN WITNESS WHEREOF the parties have caused to agreement this …… day of …… be executed the day and years first before.

SIGNED and **DELIVERED** by

the said .....

MUNICIPAL MAYOR

And.....

MUNICIPAL DIRECTOR

For and on behalf of the

KINONDONI MUNICIPAL COUNCIL
This ……day of ……..

.....

In presence of

Signature

…….....

Name.....

Designation: **MUNICIPAL SOLICITOR**

KINONDONI MUNICIPAL COUNCIL

Postal AddressBox 31902

DAR ES SALAAM.

SIGNED and **DELIVERED** by

the said …… ……

……... **CONTRACTOR**

For and on behalf

……

……

……

This ……day of …….....

In presence of

Signature…….

Name: …….

Designation: ……

Postal Address: ……..

Source: KMC, 2007

Appendix 5.1: Kinondoni Municipal Council (Waste Management and Refuse Collection Fees) under G.N.NO. 353 as Amended in 2004

FIRST SCHEDULE

SUMMARY OF REFUSE COLLECTION CHARGE RATES (MZIMUNI, MAGOMENI, NDUGUMBI, MAKURUMLA, KIJITONYAMA, MWANANYAMALA, MAKUMBUSHO, KINONDONI AND SINZA)

S.No	Name	Amount in TZS	Amount in US$
1	Private Boarding Primary Schools - (per month)	15,000.00	11.50
2	Private Day Secondary School - (per month)	10,000.00	7.70
3	Private Boarding Secondary Schools - (per month)	25,000.00	19.20
4	Other learning Institution - (per month)	25,000.00	19.20
5	Groceries - (per month)	10,000.00	7.70
6	Bar - (per month)	15,000.00	11.50
7	Butcher - (per month)	5,000.00	3.80
8	Pharmacy (I) - (per month)	10,000.00	7.70
9	Pharmacy (II) - (per month)	5,000.00	3.80
10	Markets (per trip)		
	$4.5m^3$	25,000.00	19.20
	$6.0m^3$	30,000.00	23.10
	$10.0m^3$	35,000.00	26.90
11	Streets Market (Magenge) per table - (per month)	2,000.00	1.50
12	Food vendor (Mama Ntilie) - (per month)	1,000.00	0.80
13	Truck offloading Farm Produce at unauthorized areas	10,000.00	7.70
14	Truck offloading farm Produce at Market per trip ($2m^3$-$6m^3$)	3,000.00	2.30
15	Above $6m^3$	5,000.00	3.80
16	Bus Stations (per bus per day)	500.00	0.40
17	Mosque/church - (per month)	2,000.00	1.50

FIRST SCHEDULE – *(continues)*

S.No	Name	Amount in TZS	Amount in USD
18	Small business (informal) – Sector - (per month)	1,000.00	0.80
19	Informal dry cleaner, tailors - (per month)	1,000.00	0.80
20	Informal Carpenter - (per month)	1,500.00	1.20
21	Shoe makers - (per month)	500.00	0.40
22	Electronic gadgets repair - (per month)	2,000.00	1.50
23	Street Barbers - (per month)	1,000.00	0.80
24	Saloon (licensed) - (per month)	5,000.00	3.80
25	Petrol Stations - (per month)	30,000.00	23.10
26	Kerosine station - (per month)	3,000.00	2.30
27	Ware house (per trip)	30,000.00	23.10
28	Charcoal stores - (per month)	2,000.00	1.50
29	Hotels		
	Rooms 01-10 per month	15,000.00	11.50
	Rooms 11-20 per month	30,000.00	23.10
	Rooms 21-30 per month	50,000.00	38.50
	Rooms 31-50 per month	75,000.00	57.70
	Rooms 51-100 per month	100,000.00	76.90
	Rooms 101 – above per month	200,000.00	153.90
30	Offices		
	Staffs 01-10 per month	10,000.00	7.70
	Staffs 11-20 per month	20,000.00	15.40
	Staffs 21-30 per month	30,000.00	23.10
	Staffs 31-50 per month	40,000.00	30.80
	Staffs 51-100 per month	50,000.00	38.50
	Staffs 101 – above per month	100,000.00	76.90
31	Bundle Waste per month	200,000.00	153.90
32	Construction Waste per trip	25,000.00	19.20
33	Garage per month	5,000.00	3.90

SECOND SCHEDULE

SUMMARY OF REFUSE COLLECTION CHARGE RATES (TANDALE, MANZESE, MBURAHATI, HANNASIF, KIGOGO, MABIBO AND MAKUBURI)

S.No	Name	Amount in TZS	Amount in USD
1	Residential areas per household (per month)	500.00	0.40
2	Commercial, Industrial & Institution		
3	Tea Room (per month)	5,000.00	3.90
4	Cafe (per month)	5,000.00	3.90
5	Ice Parlour (per month)	10,000.00	7.70
6	Restaurant (per month)	10,000.00	7.70
7	Guest House (per month)	10,000.00	7.70
8	Dispensary (domestic waste) (per month)	5,000.00	3.90
9	Health centre (domestic waste) (per month)	10,000.00	7.70
10	Hospital (domestic waste) (per month)	30,000.00	23.10
11	Sawing mills (per trip)		
	$4.5m^3$	25,000.00	19.20
	$6.0m^3$	30,000.00	23.10
	$10.0m^3$	35,000.00	26.90

SECOND SCHEDULE – *(continues)*

S.No	Name	Amount in TZS	Amount in USD
12	Furniture making (per month)	20,000.00	15.40
13	Metal workshops (per month)	20,000.00	15.40
14	Industries (light waste) (per trip)		
	4.5m3	25,000.00	19.20
	6.0m3	30,000.00	23.10
	10.0m3	35,000.00	26.90
15	Industries (heavy waste per ton)	5,000.00	3.90
16	Wholesale shops (general) - (per month)	10,000.00	7.70
17	Retail shop (food and other items) - (per month)	5,000.00	3.90
18	Retail shops (other commodities) - (per month)	10,000.00	7.70
19	Private Day Primary Schools - (per month)	10,000.00	7.70
20	Private Boarding Primary Schools - (per month)	15,000.00	11.50
21	Private Day Secondary Schools - (per month)	10,000.00	7.70
22	Private Boarding Secondary Schools - (per month)	25,000.00	19.20
23	Institution - (per month)	25,000.00	19.20
24	Groceries - (per month)	10,000.00	7.70
25	Bar - (per month)	15,000.00	11.50
26	Butcher - (per month)	5,000.00	3.90
27	Pharmacy (I) - (per month)	10,000.00	7.70
28	Pharmacy (II) - (per month)	5,000.00	3.90
29	Markets (per trip)		
	$4.5m^3$	25,000.00	19.20
	$6.0m^3$	30,000.00	23.10
	$10.0m^3$	35,000.00	26.90

Source: KMC, 2008

Appendix 6.1: List of Questionnaire Forms

Private Contractors for SWM in KMC Questionnaire Form No.1

- Name of Ward
- Name of Respondent/Title/Company
- Nationality
- Name of Interviewer/Date

1. For how long have you been involved in solid waste collection?
2. i) Why did you decide to engage in Municipal in solid waste collection services?

   ii) What motivated you?
3. i) What services were you providing before engaging in solid waste collection?

   ii) And which areas did you serve?
4. What are contractual arrangements between you and the Municipality i.e. do and don'ts?
5. i) What are your obligations to the residents/communities under your area of services?

   ii) And what are the obligations of the residents/communities under your area of services?
6. i) Which areas are you serving-(names, total coverage and population)?

   ii) Why and who defined it?
7. i) Who are your main customers?

   ii) And how do you contact them?

8. What are the main types of solid wastes common in your area(s) of operation? .
9. How do you collect solid waste in your area/neighborhoods?
10. What is your organization/company

    a) capacity in terms of; i) People ii) Equipment iii) Skill iv) Company Setup (etc)

    b) What are the capacity gaps?
11. With your current level of equipments how much waste you are able to collect per day/ week/month (percentage of the total)? How do you handle these solid wastes from your area of services?
12. a) How much do you charge the households and other businesses in your area of services?

    b) Trends of revenues/funds accrued in the past five years in your business area/areas.

Financial year	Amount Accrued
2003/4	
2004/5	
2005/6	
2006/7	
2007/8	

13. How do you fix waste collection and disposal rates i.e. service charges?
14. How do you rate customers' acceptance of your services and their willingness to pay for the services you are rendering?
15. How do you rate residents/community cooperation and participation in your area of solid waste collection services?

16. Are you aware that solid waste is one of the local economic resources? If (Yes) how? If (Not) why?
17. That being the case then, what should be done to improve community participation in local resources mobilization for solid waste collection? Do you also perform capacity building programs in your area of business? (i) If (Yes) How? (ii) If (No), Why?
18. How information on solid waste is collected and stored. If there are any inadequacy; How and Why
19. Information/data on how resources/revenues accrued and are used/spent in the last five years

Financial Year	Activities/Benefits
2003/4	
2004/5	
2005/6	
2006/7	
2007/8	

20. What are major strengths, weaknesses and opportunities of your contract with the Municipality in local resources mobilization for solid waste collection? What are the overall constraints and challenges/problems or envisaged by you in local resources mobilization for solid waste collection? What should be done to improve/ prevent this situation?

21. Any other general comments/opinion regarding issues on towards local resources mobilization for sustainable solid waste collection in your area/areas of business.

Households Questionnaire Form No.2

1. Questionnaire No. [ ] 1(a) Name of Enumerator_____Code: [ ] (For official use only)

2. Name of Ward: Code of Ward: [ ]

3. Name of Respondent:. Title: Title Code: [ ]

4. Marital Status:1. Married 2.Not Married 3. Separated 4. Divorced [ ]

5. Gender 1. Male 2. Female [ ]

6. Age [ ]

7. Nationality 1. Tanzanian 2. Non Tanzanian: Mention

8. Name of Interviewer:

9. Date of Interview: [dd/mm/year][/ /] .For how long have you been living here?[rounded up years][ ]

10. Are you living in your own family house or a rented house/room? 1= Own family house 2= Rented house 3= Rented room(s) [ ]

11. How big is your family? [ ]

12. What economic activities are you undertaking in where you live? [To be coded later.

13. In the course of undertaking various economic activities, what type of waste are you mostly producing? [To be coded later 21 (a)][ ]

14. How do you handle/treat these household wastes? [To be coded later 13(a)]

15. Are there any solid wastes services being provided by private operator/CBOs/NGOs? Contracted by the Municipal Council) in your area? 14(a) Yes=1 2.No 3= don't know [ ]

16. For how long have the private operators CBOs/NGOs been involved in solid waste? Collection and management in your area/ settlement? [in months? Years?

17. How do you rate private operator's performance in your area regarding solid waste?

Collection in terms of activity? I) Extremely active ii) Very active iii) Moderate activeIV) Not active v) Dormant VI) Don't Know

18. Then, how and Why? [To be coded later 17.(a) [ ]

19. How did you learn about the presence and operation of the private contractors/ CBOs/NGO in solid waste collection and disposal in your settlement?[To be coded later 18(a)[ ]

20. How were you involved in the process of engaging CBOs/NGOs/Private Company in solid waste collection? If no, Why? [To be coded later 19(a) [ ]

21. Are you aware of any services of private operators/ CBOs/NGOs who are providing solid waste collection and disposal in your settlement without any

Municipal contract/ registration? 1=Yes; 2= No; 3= Don't Know 20(a)

22. If (Yes), in what way? [To be coded later] 21(a [ ]

23. And how much do you pay such nature of operator(s) compared to the registered ones (private company/CBOs/NGOs) for the same services Daily/weekly/monthly? .(a)1=Daily, 2=Weekly 3= Monthly (b**)** How much? TZS._____

24. Is there any individual people providing the same services in your area?

Without registration from the Municipal? 1=Yes; 2=No; 3=Don't Know

25. If, they exist how they do handle/treat these solid wastes in your area/settlement? To be coded later

25a [ ].These individuals, they do really charge anything for the services they provide or free of charge? 1= Yes, they charge; 2= They don't, free 3= Sometime free/charge 4=Don't Know

26.What are your opinion regarding the amount you pay to the private operators(s)/ CBOs/ NGOs for the services you are rendered? 1=Too high and unaffordable, 2=moderate and affordable or 3=low

26a and how and why? [to be coded after analysis} 26b [ ]

27. If you do not use services of the private operator(s) /CBO/NGO/non-registered individuals. Then, why? To be coded later

28. How do you rate the quality of services offered and why? To be coded later

29. What is your main reservation about private operators/ CBOs/NGOs/non-registered? Individuals (if any) engaged in solid waste collection in your area? To be coded later

30. How do you assess the quality of Municipal services provided by private/CBOs/NGOs/non p registered individuals(if any) in terms of frequency, reliability, fees, capacity – equipments, finances, staffs etc as compared to the period when they were provided by the government agencies(municipals)? To be coded later

31. Are you willing to continue paying for services delivered by the private operator(s)/CBOs/NGOs/non-registered individuals (if any)?1=Yes ; 2=No If yes or no, give reasons?

32. What are your opinions if, such services will be provided by the community itself from your area/settlement? To be coded later

33. Currently, how do you handle/treat solid wastes which absolutely you know that, are qualifying for economic re-uses at your place/area?

    [To be coded later 32(a)]

34. Are you aware that solid wastes are one of the economic resources? 1=Yes; 2=No [ ] (a) If yes, how? (b) If no why?

35. In your own opinion, do you think community participation in local? Resources mobilization for solid waste collection in your area fail because of lack of empowerment? 1=Yes; 2=No; 3=Don't Know 4=Not Sure

36. If (Yes); what kind of empowerment do the communities urgently need in your area? [To be coded later 36 (a) If (Not); what other reasons can you advance for this failure? [To be coded later 36 (b)] [ ]

37. What are your suggestions, on what can community do to effect a reliable/sustainable local resources (waste qualifying for economic re-use) mobilization for solid waste management in your area?[To be coded later 37(a)]

38. What type of incentives is required in order to ensure that local communities/households are sorting out solid waste at source or before they pack them to the dumpsite? [To be coded later 38 (a)]

39. Any other personal comments/opinion regarding issues on towards local resources mobilization for sustainable solid waste collection in your area/areas? [To be coded later 39(a)] [ ]

Solid Waste Recyclist Factories Questionnaire Form No. 3

1. Factory particulars:

What types (kind) of solid waste materials do you mostly use in your recycling process? Solid waste materials used to be categorized and coded later: Wastemat1: Wastematl2 [ ] Wastematl3 [Wastematl4 [ ]. How do you acquire these solid waste materials in most cases (e.g. from individual scavengers or agents)? How acquired 1= Individuals scavengers; 2=Agents; [ ] If agents; what kind of those agents (e.g. CBO's/Coy's etc)? [Two sources to be exhaustively broken down and coded later] Source: Individuals: 1=Boy; 2=Girl; 3=Grownup woman; 4=Grownup man

5= etc. Agents: 11= Company; 12= CBO/IGA; 13=Schools [ ] Why did you choose to use such kind of resources of solid waste materials? Whymater1 Whymater2:[reasons of use to be coded later] [ ]

2. Estimated quantity and sources in the past five years

Years	Estimated Acquired Materials Weight/ Quantity and Buying Prices
2004	Material List Weight (Kgs) or Pcs Price in T.Shs 1=Individual scav. 2= Agents materl matweigh matpcs matprice matsourc 1. _____ [ ] [ ] [ ]

	[ ] 2.etc
2005	1. _____ [ ] [ ] [ ] [ ] 2.etc
2006	1. _____ [ ] [ ] [ ] [ ] 2.etc
2007	1. _____ [ ] [ ] [ ] [ ] 2.etc
2008	1. _____ [ ] [ ] [ ] [ ] 2. etc

3. Trends of revenues/funds accrued from recycling business in the past five years

Financial Year Finyear	Amount Accrued Amtaccru
2003/4	TZS_____
2004/5	TZS_____
2005/6	TZS_____
2006/7	TZS_____
2007/8	TZS_____

Do you also perform capacity building programs in your area of business (material collection for recycling)? If (Yes), Capbuild: 1= Yes 2=No [ ] If yes, How? How build: [to be coded} later] How? iii) If (No), Why? Notbuild2 [to be coded later][ ] Notbuild1: Why?

4. What are the capacity gaps as per the following schedule?

Items	Capacity gaps (1=Adequate 2= Gaps/Deficit)	Quantify Capacity gaps/Deficit, i.e. No, kgs, tons etc.
Personnel		
Skills/knowledge		
Equipments		
Company set up		
Production		
Storage		
Transportation		
Marketing		
Acquisition of raw materials (etc)		

5. Information/data on how resources/revenues accrued are used/spent in the last five years.

Activity/Benefits: [Benefits to be coded later after analysis] [ ]

Financial Year Finyears	Activity/Benefits Benefits: Briefly explain benefits herein below
2003/4	
2004/5	
2005/6	
2006/7	
2007/8	

If there is inadequacy in terms of solid waste materials (raw materials) for recycling business, then

Is there inadequacy? Inadequt: 1=Yes; 2=No [ ] If yes, why? Why_inad [to be coded later] [ ] Briefly explain why: Inadequat1. What constraints and challenges do you face in your recycling business and how are you prepared to solve them? What constraints/challenges do you face? [to be coded later] Constraint1: [ ] Constraint2: [ ] Constraint3 [ ] Constraint4 [ ]

6. Any other suggestions/ comments/ opinion regarding acquisition of recycling business raw materials and so on.

Source: Own construct, 2007